# THE IRON AGE

THURSDAY, AUGUST 22, 1901.

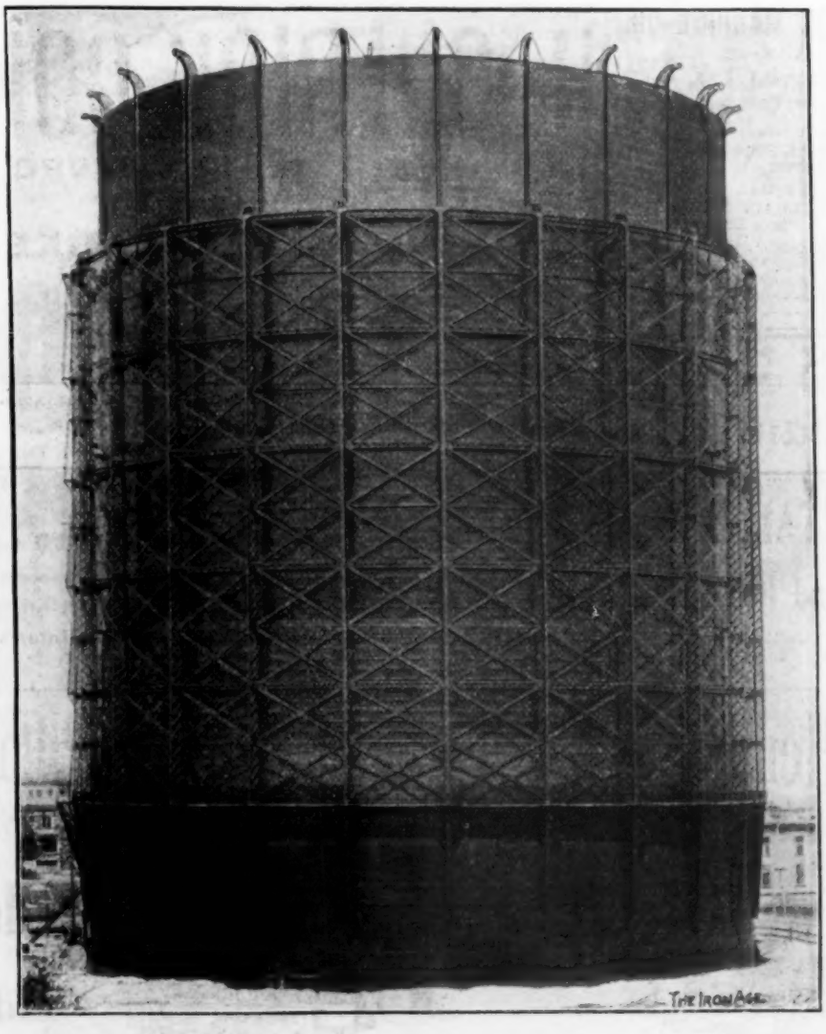
## A Giant Gas Holder and Its Erection.

What at the time of its erection was the largest gas holder in the United States was completed in 1895 at Long Island City for the East River Gas Company. Since then two others, equal in size, have been built.

Although the East River Gas Company were organized mainly for the purpose of supplying New York City with gas, the location across the East River was determined upon as it offered facilities, mainly in docking and water supply, which could not be obtained without a prohibitive outlay upon the west side of the river. The plant is intended ultimately to supply 24,000,000 cubic feet of water gas, the requisite materials necessary being water for the boilers and other machines, coal for generator and steam purposes and naphtha or crude petroleum. The last two materials demand extended dock and storage facilities. At the present time the generator coal pocket has a frontage of 92 feet, with a length and hight sufficient to store 6000 tons of broken anthracite coal. To conduct the gas to New York City the East River was bored by a tunnel which will ultimately contain two 36-inch pipes and one 48-inch pipe.

It is a fact in gas holder construction that the larger the capacity the less the cost per thousand feet, both as regards erection and subsequent maintenance. It is not a case of putting all the eggs in one basket, since in no instance has a mammoth gas holder met with destruction when designed and built by an experienced and reliable firm.

The diameter of the tank of the holder is 190 feet. The holder itself is built in four sections or lifts; the first, or inner one, is 179 feet 4 inches in diameter by 48 feet 6 inches deep; the second, 182 feet in diameter by 49 feet deep; the third, 184 feet 6 inches in diameter by 48 feet 6 inches deep, and the fourth, or outer one, 187 feet in diameter by 49 feet 2 inches deep. The entire structure is built of steel with the single exception of the cast iron guide rollers. The plates of the lower shell are 1 23-32 inches thick and are 53½ inches wide by 25 feet 10⅝ inches long. None of the metal of the shell is below an elastic limit of 32,000 pounds, and the design is such that over 90 per cent. of the gross section is made available in the joints. The thickness of each course is proportionately reduced as the courses approach the top, where it is 7-16 inch thick.




A GIANT GAS HOLDER AND ITS ERECTION.

### Peculiarities of the Holder.

As will be noted by the engraving, Fig. 1, the guide frame of the holder does not extend clear to the top when

the lifts are extended, the upper portion of the top lift being exposed. This practice, while previously employed in England, has been first followed in this country by R. D. Wood & Co. of Philadelphia, who designed and erected the holder, and is a result of a close study of the conditions affecting the stability of structures of this character. While there is considerable saving in material in the supporting frame by not guiding the four sections to the full hight, the principal economy lies in the cost of erection. This is due to avoiding the erection of the upper section, since the expense of putting up a guide frame becomes greater as the hight increases.

Since the most serious menace to a balloon like structure of this kind is from high winds a wind pressure of 32 pounds per square foot, equal to 16 pounds on a diametrical section of the holder, has been provided for.

The total weight of the moving part or floating portion of the holder is 2,000,000 pounds, this, of course, being supported by the gas contained within. The weight of the tank or lower stationary section is 2,500,000 pounds, the total weight of the entire holder being 5,700,000 pounds.

*Fig. 2.—Lowering the Bottom of Holder.*

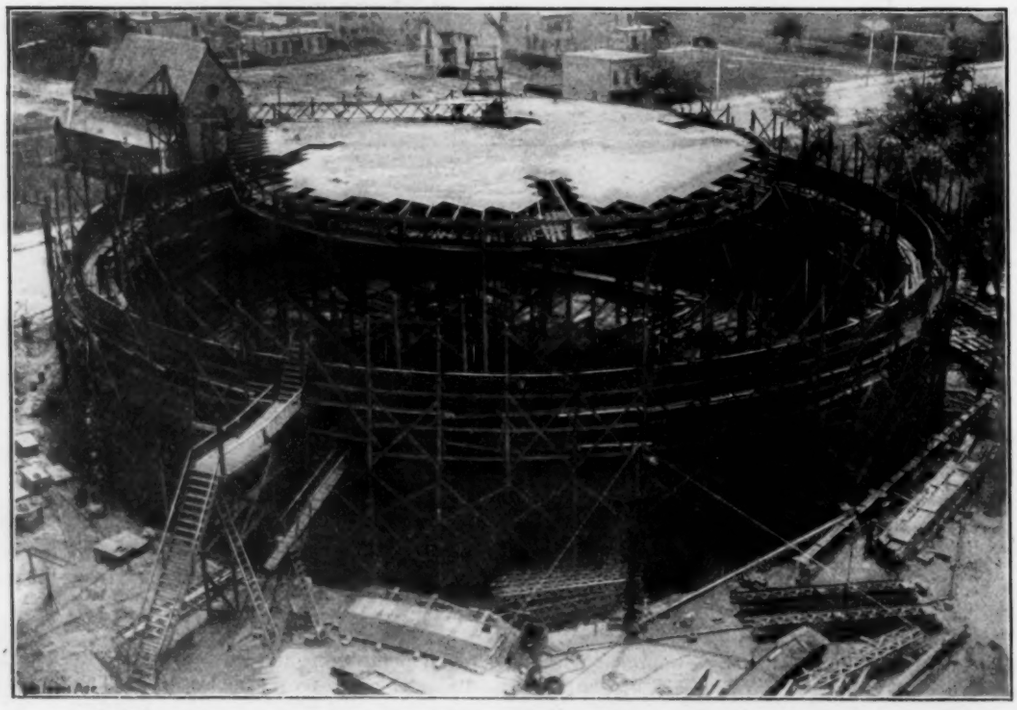


*Fig. 3.—Framing Supporting Crown.*

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**The Erection.**

The first work in erection was the clearing away of the foundation down to rock, upon which was placed a level bed of concrete. On this the bottom plate of the tank

was built on trestles a few feet above ground, and then lowered by means of screw jacks, as indicated in Fig. 2. That it was no easy task to lower evenly a thin sheet of iron nearly 200 feet in diameter will be appreciated. Placed evenly over the plate were screw jacks passing through hand hole covers. The upper end of the screw was formed with an eye into which a long bar was inserted so that the screw could be operated by a man. These screws were placed at equal distances over the entire surface, and at certain signals the screws were turned a definite portion of a rotation. In this way the entire plate was brought down to a bearing upon the foundation.

The crown or roof of the inner lift was built with a wood frame or false work, illustrated in Fig. 3, and which was allowed to remain after completion of the entire work in order to support the crown if at any time it became necessary to deflate the holder. This crown is spherical in section. While this work was going on the sides of the several lifts of the tank were being constructed. Hydraulic riveters of different sizes were employed. Two of these riveters are shown at work in Figs. 4 and 10, one being on the shell and the other being on the frame. R. D. Wood & Co. have since on similar work, such as the 4,000,000-foot holder for the New York Mutual Company, and the 2,500,000-foot holder for the Central Gas Light Company, used both hydraulic and pneumatic riveters.

**Derricks and Cranes.**

It is essential and in fact a point of the utmost importance in a work of this kind that all material should be handled expeditiously and that all tools and appliances too heavy to be lifted by hand should be conveyed quickly to the points where they are needed. Material to be raised 250 feet from the ground and there secured in position must be handled speedily in these days where quick results are so much sought. In the present instance, in order to accomplish this, two systems of cranes or derricks were used. One, shown in Figs. 5, 7 and 9, consisted of a horizontally disposed truss, one end of which was pivoted on a frame at the center of the holder at a hight a little above that of the several lifts. The outer end of the truss was carried on shears and 9. The operating machinery, consisting of a steam hoisting engine, was carried upon the platform illustrated in Fig. 5.

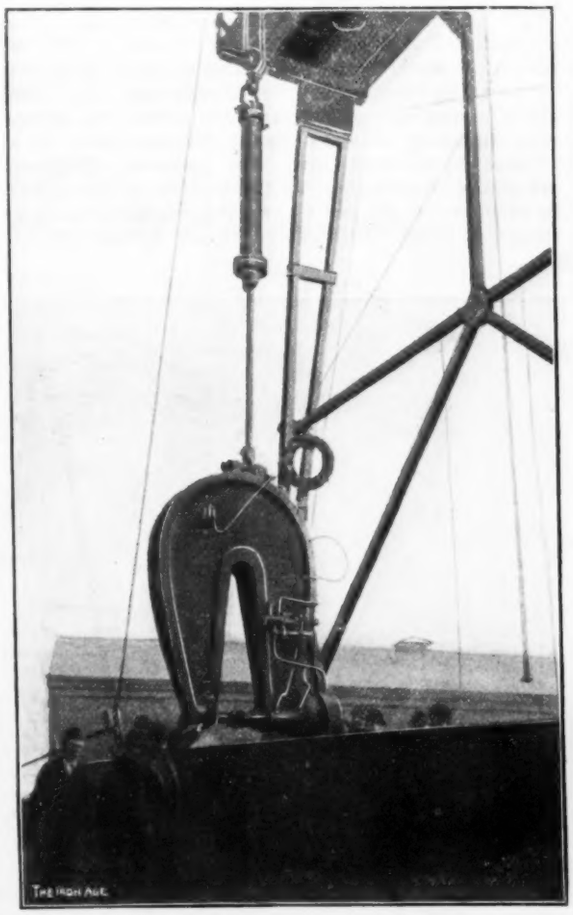

*Fig. 4.—Hydraulic Riveter at Work on Side Plates.*

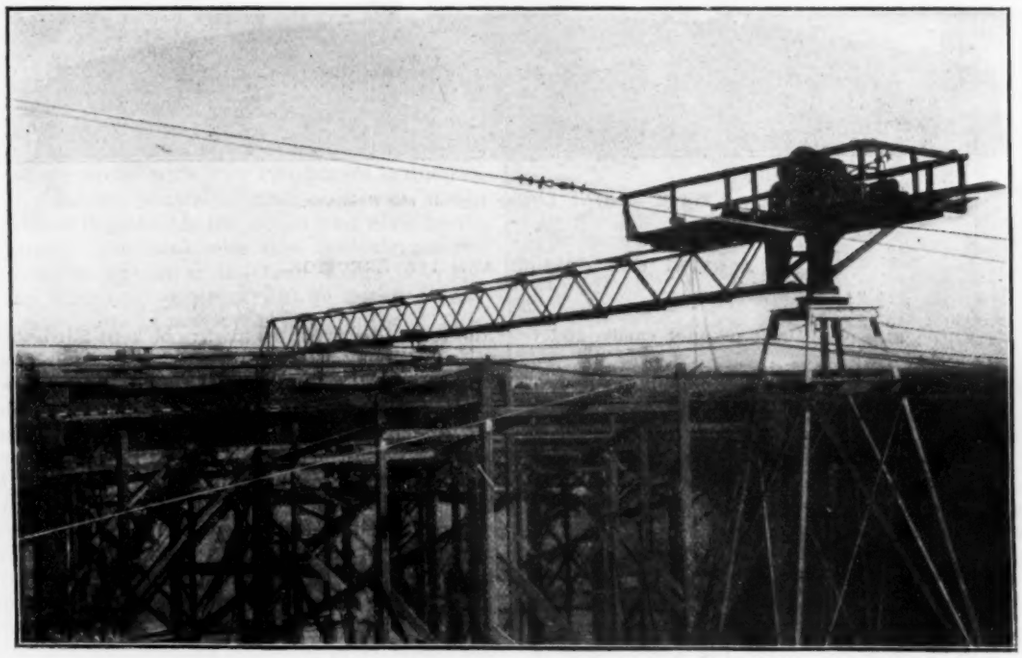

*Fig. 5.—Revolving Crane for Plate Work.*

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provided with rollers moving upon a track concentric with the holder. These trammels were only used on plate work for handling the plates themselves and the riveters. They are shown in side elevation in Figs. 7

**The Frame.**

The frame is composed of 24 latticed columns arranged at equal distances in a circle 190 feet in diameter. They are united by five tiers of latticed girders and a

double system of diagonals. Each column is composed of five equal sections, the total length of a single one being 150 feet. The bottoms of the columns rest upon bracket plates secured to the tank. Each section of each column was finished at the works, transported to the site and then assembled on tracks so arranged that the column rested tangentially as compared with the tank, as shown in Fig. 13. To raise the column the derrick shown in Figs. 6 and 8 was brought into play. This derrick moved upon a circular track around the holder, being supported upon a centrally disposed pivot, as in the case of the shell crane. The operating machinery was placed on the floor at the bottom of the holder. The column was gripped by two independently operated systems of ropes, raised, swung to an upright position

furnish a seal to prevent the escape of the gas and to permit the free upward and downward movement of the several sections. One leg of each U enters between the legs of the meeting U, the two U's forming a seal, being by this design united. When filled with water they form a perfect barrier to the passage of gas. In this particular construction the top of one section is provided with a horizontally placed and encircling channel iron 10 inches wide and to the outer flange of which is riveted a plate, as shown in section, Fig. 12. This drawing also shows that the U form thus produced is inverted when attached to one section and in upright position when attached to the adjoining section. The cups thus formed are 21 inches in depth.

Since these cups are always exposed to the weather

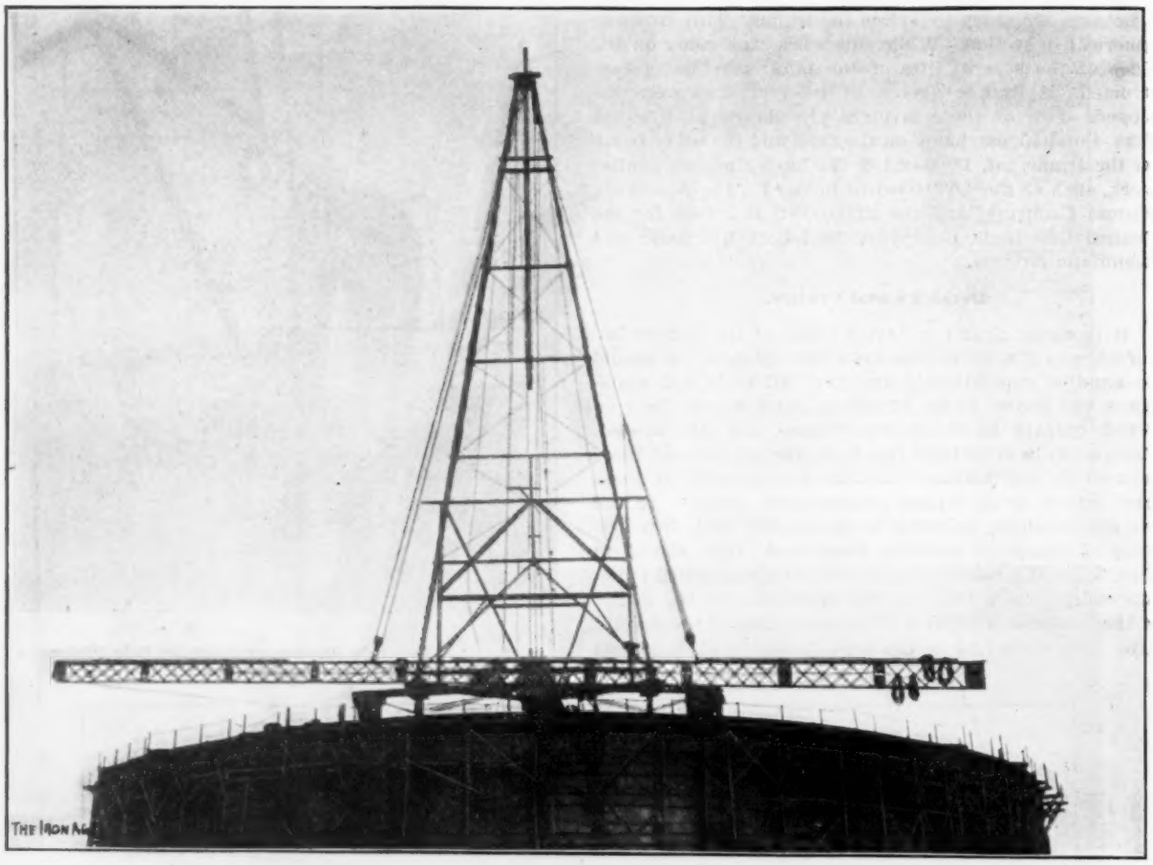

*Fig. 6.—Derrick Lifting One of the Columns.*

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and then lowered into place in a manner easily understood

At each column each lift is provided with a system of guide rollers, shown in perspecitve in Fig. 14 and in their principal features and dimensions in Fig. 15. Each system of rollers, except the upper one, consists of a group of three grooved pulleys, one made to engage with the face of a rail on the inside of the column and the other two made to rest one on each side of this rail, thus providing a three-point bearing. The guide rollers for the inner or upper lift consist of a single grooved pulley for each column. These pulleys are all carried by plate brackets secured in the manner shown in Fig. 15 to the tops of the several lifts. The guide rollers of the upper lift of course leave the columns when the lift is at its extreme elevation. Tapering guides are therefore provided on top of the columns in order to insure the proper entrance of these guide rollers during the descent of the lift.

**Holder Cups and Grips and Interior Overflow.**

The bottom of each lift, except the outer one, is formed with a U-shaped cup in which water is placed to

and to be effective must always be kept filled with water, it becomes necessary to prevent this water from freezing, and also to provide an overflow which will take care of any surplus water. Steam pipes furnished with flexible hose connections upon the outside of the holder so as to permit of the rise and fall of the different sections guard against freezing of the water in the cups. Heretofore it has been the common practice to let the overflow take care of itself, a consequence being that this would most often run down the sides of the holder in winter, frequently forming a mass of ice, both difficult and troublesome to remove. The Matton overflow, here illustrated, guards against any inconvenience of this character by providing an automatic overflow to the interior of the tank. It is believed to be preferable to the extended grip sheets generally used, as they are difficult to keep tight. At intervals around the cups are placed U-shaped pipes, the legs of which are of unequal length, as indicated in both views, Figs. 11 and 12. The short leg of this pipe is provided at its top with an overflow leading through the wall of the lift and formed with a spout shaped mouth, Figs. 12 and 16, so that all water from the cup is led to the inside of the holder,

where it falls to the bottom without coming in contact with the metal in its passage. Since the cup is 21 inches in depth and the long arm of the U drain but 16 3-16 inches in length the water in the cup is kept at a constant level and by no possible means can it overflow except through the passage provided for the purpose.

**The Snoqualmie Falls Power Company.**—The Snoqualmie Falls Power Company of Seattle and Tacoma have placed an order with the Pittsburgh Reduction Company for 250,000 pounds of aluminum wire cable, which will more than double the capacity of their transmission system. Coincident with this, the enlargement of the generating station at the head works is under way, and an additional penstock will be installed having 50 per cent. more capacity than the first one. This penstock will feed three water wheel sets, each one of which will drive a direct connected Westinghouse 5000 horse-power generator. The underground cavity will be extended eastward about 150 feet, to accommodate the increase. Contracts have been let also for terminal substation structures in Tacoma and Seattle, which will be occupied and in use about January 1, 1902. The present quarters for distribution purposes are rented premises. Charles H. Baker, president of the company, in whose charge the engineering and construction work is, estimates that this increase of capacity will be available in about ten months. The Snoqualmie plant, when this increase is made, will have a capacity of 25,000 horse-power, and will therefore be the largest water power plant in the United States outside of Niagara. All the electric street cars, all the municipal and domestic lighting, flour mills, machine shops and industries where electric motors are employed in Seattle and Tacoma are run by the Snoqualmie plant, and effort is now being made to induce the company to extend their lines to Everett, Wash., to handle the paper mill and smelter there and to improve the local lighting service.

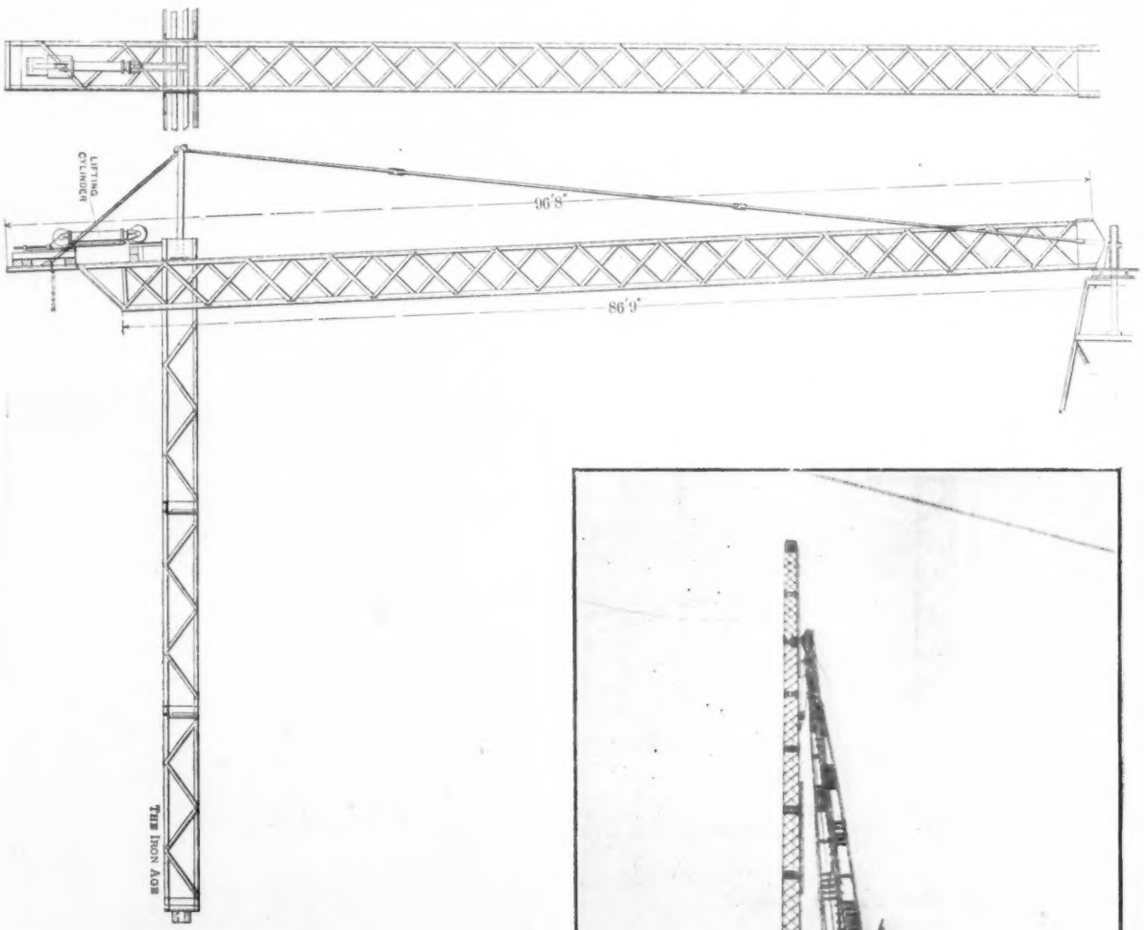


*Fig. 7.—Riveting Trammel.*

## Canadian News.

**Effect of the Steel Strike in the Dominion.**

TORONTO, August 16, 1901.—Canada draws nearly all its tin plate from the United Kingdom. That commodity is the main relic of the large trade in iron and steel done here by British manufacturers prior to the last half decade of the nineteenth century. In the fiscal year 1900 the Welsh mills sent to this country 480,794 cwt. of tin plate, and those of the United States sent 8364 cwt. This country, therefore, will not be likely to suffer in consequence of the tie up at the works of the American Tin Plate Company. So far from Canada looking to the United States just now for tin plate the reverse seems to be the case. According to advices from Montreal American agents are buying up all the British tin plate they can get at that point. The Montreal manufacturers of tinware are well supplied, having on hand stocks large enough to keep them going till the spring.

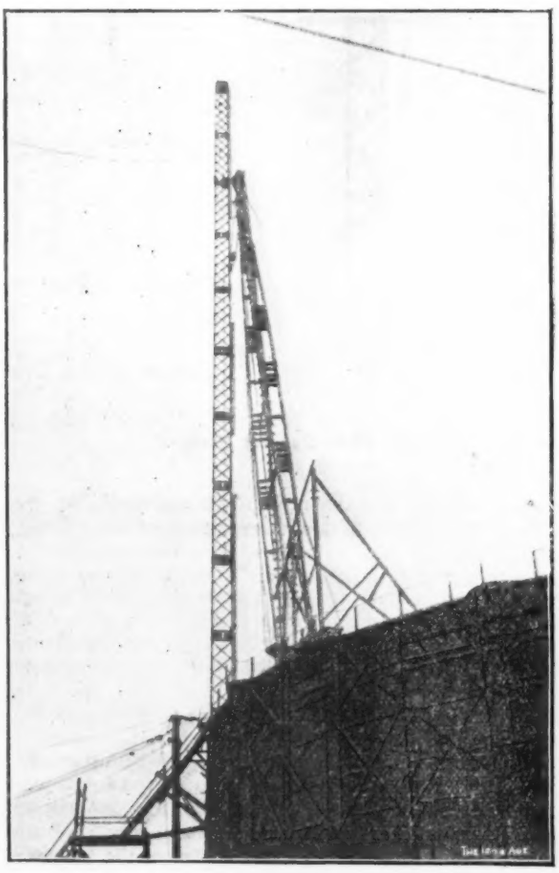

*Fig. 8.—Derrick with Column in Vertical Position.*

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Some of them are said to have disposed of large lots at prices that yield them a handsome profit, getting in some instances $2 a box more than could have been realized a month or two ago. As a rule, however, they are understood to be holding onto the bulk of their stock, the sales that have been made being from a surplus that is usually carried there with an eye to speculation at this season. Canada's own needs are just now too pressing, the orders for tins, &c., at the works are of too great volume for it to be possible to part with any considerable proportion of manufacturers' stocks.

The closing of the mills of the American Sheet Steel Company affects this country more seriously, as we buy from the United States a large part of our supply. Of Canada plates, flat galvanized iron and steel sheets, &c., we imported in the fiscal year 1900 133,697 cwt. from the United States, as against 287,403 cwt. from Great Britain. Of rolled iron or steel sheets of No. 17 gauge and thinner we took in the same year 79,668 cwt. from the United States and 92,737 from Great Britain. Of bar iron and steel the purchases from the United States in that year were 179,062 cwt., as against 82,480 cwt. from Great Britain. Thus it is to be seen that if the supply of these products should be cut off at United States mills by the strike, the matter would be corrected by an expansion of the present Canadian demand at British works. As the duty on British iron and steel is only two-thirds that on American iron and steel the transfer would not be materially obstructed by the tariff.

*Fig. 9.—Plate Hanging Trammel.*

The arrest of production at the works of the National Tube Company would be likely to cause some easing down at the bicycle manufactories here.

### Iron Discoveries.

Reports received within the last few days by the Ontario Bureau of Mines from its inspectors in three or four different parts of New Ontario announce new discoveries and new interest in iron. One important iron discovery of which the Crown Lands Department is advised is a deposit to the east of Lake Nepigon in the Thunder Bay district. Iron has been known for some time to exist there, but it is only recently that any energetic steps have been taken to prospect the region. It is stated that a company in the United States Steel Corporation have applied for 8000 acres of mineral lands there. The Algoma Commercial Company, one of the Clergue corporations, are also in the field, and have under option, chiefly from prospectors, between 4000 and 5000 acres. There are also two well defined iron ranges running eastward from the shore of the lake, a distance of 10 miles. They parallel each other at a distance of 3 miles. The ore, judged from the surface showing, is pronounced a low grade hematite, carrying 1 per cent. iron. The indications, it is reported to the department, point to a larger body than that in either the Atikokan or the Mattawin deposits, though the ore is of a lower grade.

Professor Coleman, one of the geologists of the Bureau of Mines, has written in from Port Arthur an account of a trip between that town and Fort Frances on the Rainy River, by way of Rat Portage: "Everybody," he says, "is on the *qui vive* for iron ore, and the band of magnetite and silica known as the Steep Rock Range has been traced for many miles. The tunnel through the Atikokan range discloses much more good ore than I expected to see. There is certainly a large mine of magnetite of excellent quality in the range. The other ranges have not yet been proved to contain important ore bodies, but their great extent makes it probable that more will be found.

"The recently discovered iron range near Dryden was visited, and found to be several miles in length, and in places very wide. The ore is magnetite. So far no development of any kind has taken place. It is inter-

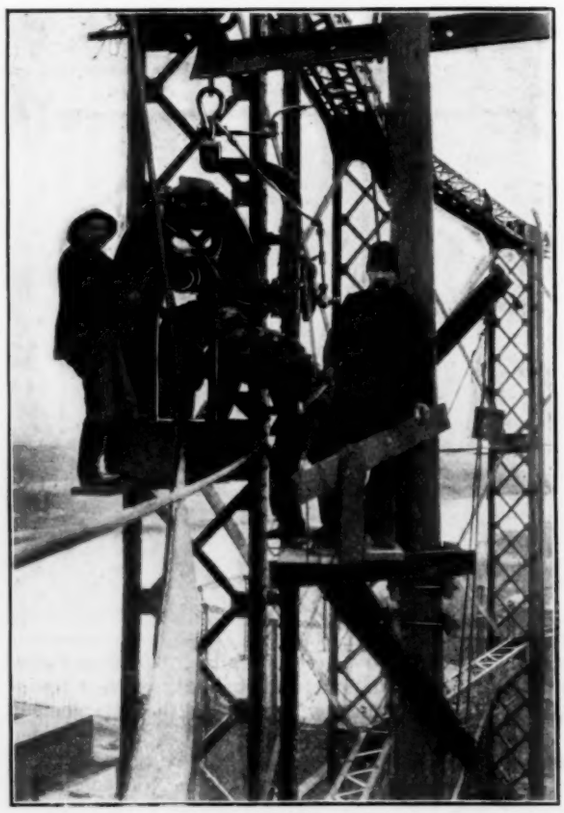

*Fig. 10.—Riveter at Work on the Frame.*

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esting to note," Professor Coleman concludes, "the number of Americans, some of them geologists of good reputation, who are studying our iron ranges, with a view to taking up properties."

Professor W. G. Miller, another geologist of the bureau, wrote from Lake Temiscamingue on the 9th from the variety of the rocks and from the discoveries which have already been made."

The officials of the Bureau of Mines regard the letter of Professor Miller as very important.

The Government's large diamond drill has been loaned to Mackenzie & Mann, who will use it for some time de-

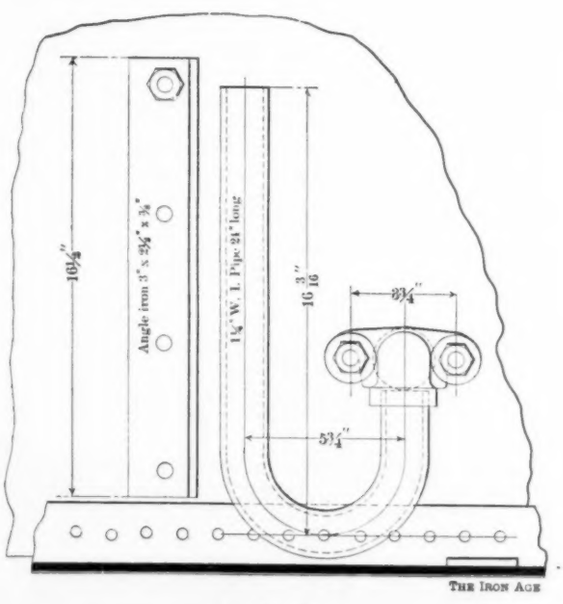


*Fig.* 11.

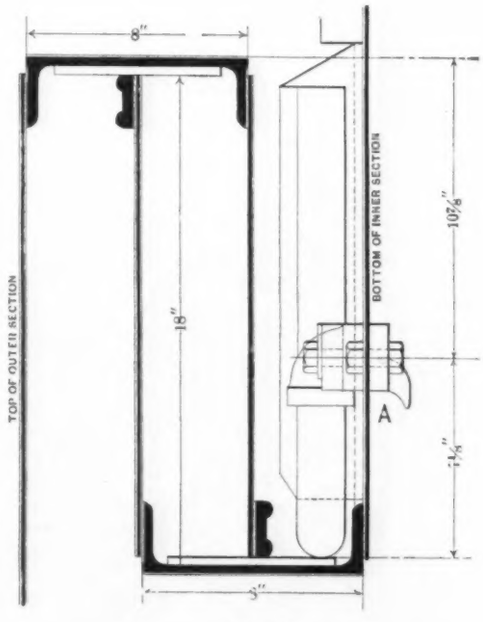


*Fig.* 12.

*The Matton Interior Overflow for Holder Cups.*

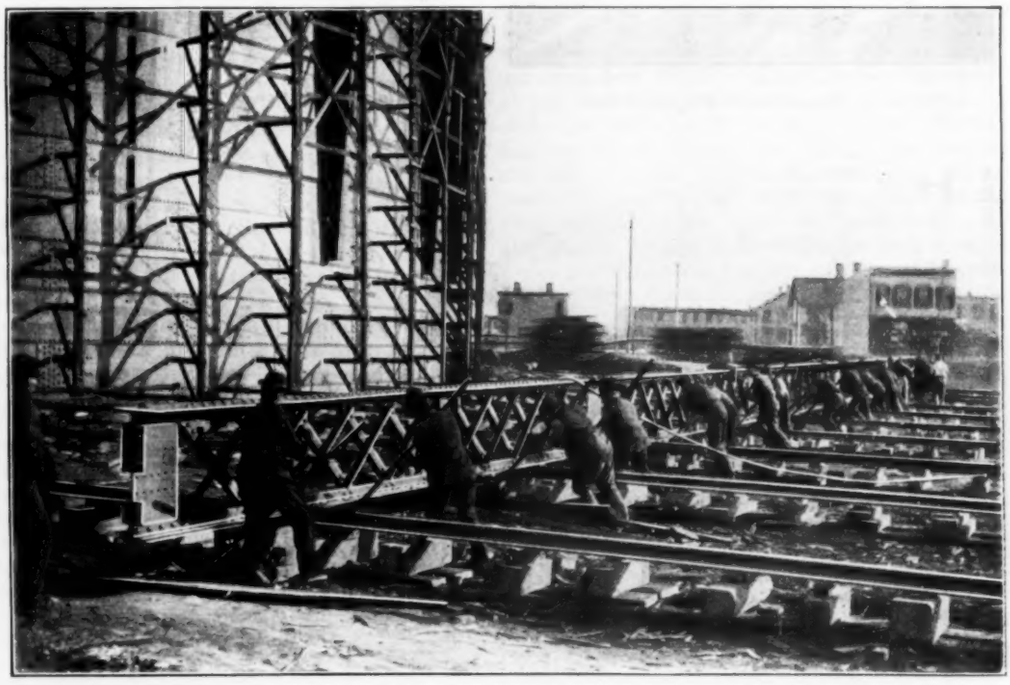

*Fig.* 13.—*Moving Column to Position for Lifting to Place.*

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inst. an account of his tour of exploration up the Blanche River and several of its tributaries to the hight of land. Just north of the lake, he says: "Rocky ridges begin to crop up, with intervening areas that seem to be good land. The rocks show considerable variety, conglomerates, diorites, quartz porphyries, &c. We also found jasper conglomerate, and some hematite copper and iron pyrites are widely disseminated, and when the country is more carefully prospected I think there are likely to be important discoveries of mineral deposits—judging both

veloping properties in the Atikokan range. It has been in operation recently on the Mattawin range.

### A Nickel Man's Views.

Major R. G. Leckie of Sunbury has just returned from Norway and Sweden, where, he says, he purchased 5000 tons of nickel ore. He reports the mining industry about Sudbury to be flourishing, but business there would, in his opinion, be still more prosperous were it not for the overhanging threat of a tax upon exportation. By the

amendment to the Mining act, passed two sessions ago, the Ontario Government is authorized to impose such a tax by order in Council. That is, it can levy the tax on the output of all mines, and refund it to those producers whose ore is treated in Canada.

Massey Station, and a smelter will be put up there immediately.

He states that he is about to start for New Caledonia to purchase 30,000 tons of nickel ore.

**The Nova Scotia Government and Shipbuilding.**

A deputation waited on the Premier and Attorney-General of Nova Scotia some days ago to urge the claims of the shipbuilding industry to public assistance. After several influential members of it had spoken in favor of the policy Premier Murray said that the Government, recognizing the importance of such an industry to the province, had given the matter consideration and had almost come to a conclusion when a notice asking for this conference was received. At a very early date the Government will make an announcement as to its policy and

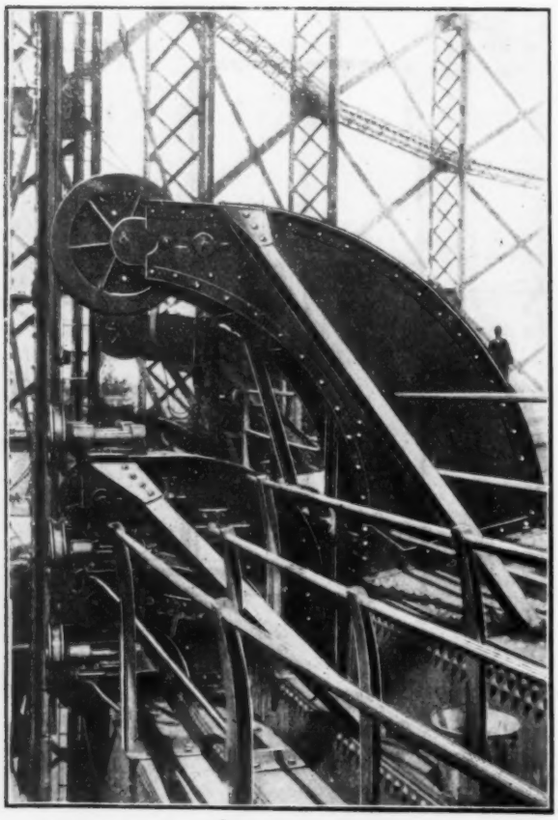

*Fig. 14.—View of One Group of Guides.*

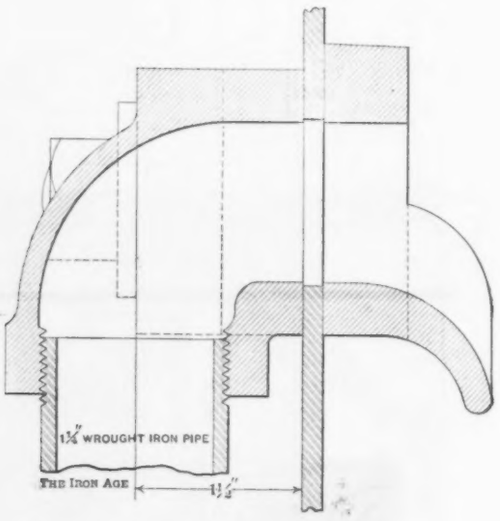


***Fig. 16.—Section of Mouth of Overflow Fig. 12.***

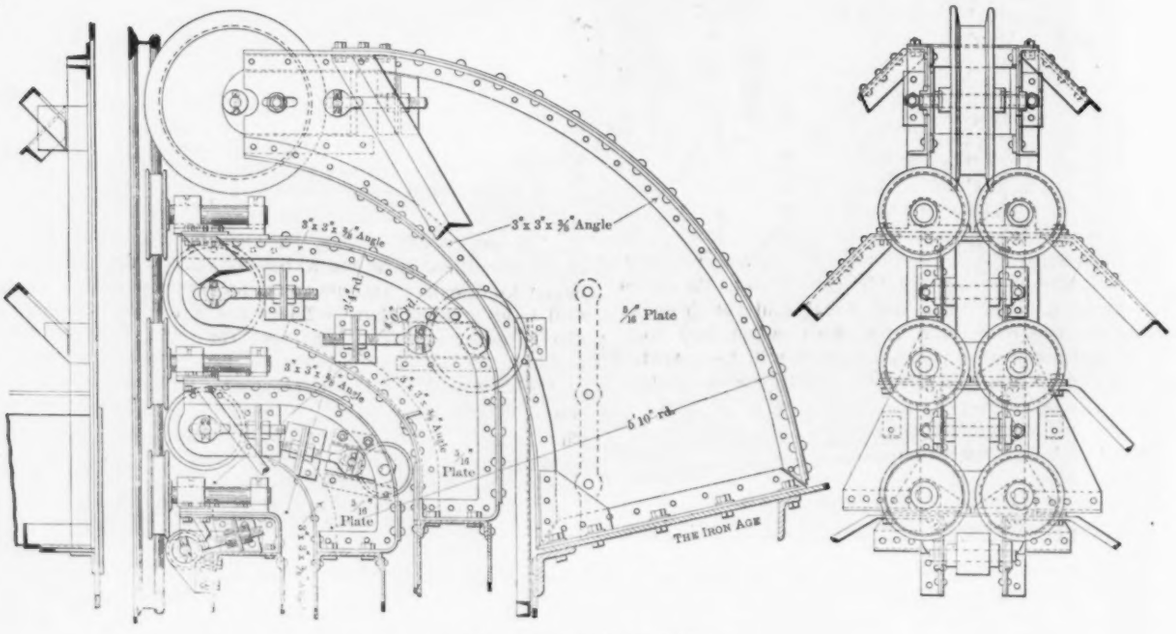


*Fig. 15.—Details of Guides.*

## A GIANT GAS HOLDER AND ITS ERECTION.

The Canadian Copper Company are now smelting from 800 to 1000 tons of ore a day, which means a product of from 100 to 120 tons of matte, and this will go higher. At present they have 2000 workmen at Copper Cliff, the site of the smelter near Sudbury, and which is probably the largest of its kind in Canada. Arrangements are in progress for opening a new copper mine at

he hoped it would prove such as to bring about what the meeting evidently regarded as so desirable.

Prominent in the deputation were members of the joint committee appointed by the Halifax City Council and Halifax Board of Trade, notably Mayor Hamilton, G. S. Campbell, president of the Board of Trade; J. F. Stavis. Alderman McIlreith, W. A. Black. C. A. C. J.

# The Chinese Tariff.

## An Opinion by an Official of the State Department.

WASHINGTON, D. C., August 20, 1901.—Details concerning the revision of the Chinese tariff, which is about to be made as the result of the settlement between China and the powers, have reached the State Department and indicate a very comprehensive modification of all the schedules. The primary object in revising the tariff is to secure additional revenue in order to pay the indemnities for the Boxer outrages which have been agreed upon, and in view of the fact that the present rates are extremely low, there is no reason to doubt that the proposed advances will result in producing the desired funds, although it is the best opinion among experienced officials here that exporters to China will in the end bear a large share of the increases, as it will be difficult to convince Chinese merchants that they should pay increased prices, and concessions may have to be made to enable American manufacturers to hold their trade. The Department's advices have been summed up for *The Iron Age* by a prominent official, as follows:

"The present tariff, which is partly specific and partly ad valorem, will be revised in two stages, temporarily by the present customs officials, and permanently by a commission, which will be composed of representatives of the treaty powers and of the Chinese Government. At present all duties are payable in silver, so that in actual practice the average net duty, which is nominally about 5 per cent., is reduced to about 3½ per cent. In addition there is an extensive free list, which embraces many articles commonly taxed by tariff countries. The protocols, which have just been completed and which may be signed any day, provide that two months from the date of signature the entire free list, with the exception of cereals, rice, flour, and gold and silver, shall become dutiable at the rate of 5 per cent. ad valorem, and that all the collections thereafter made shall be on the basis technically known as '5 per cent., effective'—that is to say, on a gold basis. These modifications will constitute the temporary revision.

"The permanent revision, which is to be undertaken as soon as the commission can be selected and convened, will embrace the task of converting all the ad valorem rates of duty in the temporary tariff—which, it should be remembered, will amount to 5 per cent. in gold—into specific rates, and the commission will also make a careful revision of all those items which now carry specific duties, but which may be found to be equivalent to less than 5 per cent. gold. The new tariff, when finally revised, will therefore be specific throughout, the rates representing a 5 per cent. gold basis, and the free list will be reduced to cereals, rice, flour, silver and gold. It is understood that a period of grace will be provided within which all merchandise afloat or in course of shipment will be admitted at the rates previously in force. Goods shipped within ten days after the signing of the protocols, of which ceremony the Department expects to be advised at almost any moment, will be admitted on the basis of the present rates of duty.

"The so called likin tax, levied by the provincial governments on goods sent into the interior, will not be embraced in the new rates and will not be affected by the revision. The representatives of the treaty powers have for a long time sought to secure the abolition of these taxes or their inclusion in the charges paid for transit passes to the interior, but thus far without success. It is impossible to say how soon the commission will be able to complete its work, but the representation of the United States will be arranged for as promptly as possible, and from the fact that but two months' notice is given before the taking effect of the temporary modifications it is assumed that all the treaty powers are ready and anxious to expedite the final revision as much as possible."

### The Present Metal Schedule.

Manufacturers of iron and steel are believed by officials here to have a very important interest in the tariff revision to be made by the permanent commission. They will not be affected in any important degree by the temporary revision for the reason that nearly all the items of the metal schedule of the Chinese tariff are dutiable at specific rates, which will not be disturbed until the commission takes up the subject, when these rates will be carefully examined and advanced to the equivalents of 5 per cent. in gold. The principal items of the metal schedule are as follows, the rates being given per picul (133 1-3 pounds):

White metal, or German silver, 5 per cent. ad valorem; nickel, cube, bar or round, 5 per cent. ad valorem; copper, manufactured, as in sheets, rods, nails, &c., $1.35; copper, unmanufactured, as in slabs, 70 cents; copper, yellow metal, sheathing and nails, 63 cents; Japanese copper, 42 cents; iron, manufactured, as in sheets, rods, bars, hoops, &c., 8.75 cents; iron, unmanufactured, as in pigs, 5.25 cents; iron kentledge, 7 cents; iron wire, 17.5 cents; steel wire, crucible, 17.5 cents; iron bands, of foreign origin, 5 per cent. ad valorem; iron nails, 5 per cent. ad valorem; iron hoops, old, 5 per cent. ad valorem; lead in pigs, 17.5 cents; lead in sheets, 38.5 cents; quicksilver, $1.40; spelter, 17.5 cents; steel, 17.5 cents; tin, 7.75 cents; tin plates, 28 cents; trusses of metal, except iron wire, to bind silk bales, 5 per cent. ad valorem.

The Chinese market for manufactures of iron and steel is expected to expand enormously in the next two or three years. For the past five years the consumption has amounted to about $6,500,000 per annum, which, however, is more than double the average consumption prior to 1885. Of this amount the United States has furnished only about 12 per cent., our total exports to China of iron and steel during the fiscal year 1900 amounting to $871,668. These exports included the following items:

Pig iron, $495; steel rods, $60; structural iron and steel, $16,550; wire, $2630; car wheels, $2550; castings, $7708; cutlery, $983; firearms, $7177; builders' hardware, $34,684; electrical machinery, $6345; metal working machinery, $4770; printing presses and parts, $2397; pumps and pumping machinery, $17,520; sewing machines and parts, $7769; locomotives, $284,000; stationary engines, $16,920; boilers, &c., $5375; cars, carriages, cycles, &c., $49,594; typewriters and parts, $8476; other machinery, $84,726; cut nails and spikes, $20,039; wire nails, $118,866; other nails and tacks, $482; pipes and fittings, $19,268; safes, $4559; saws and tools, $22,442; scales and balances, $14,799; stoves, ranges and parts, $27,279; other manufactures of iron and steel, $83,205.

### Expansion of Consumption Probable.

It is anticipated here that the next few years will see an enormous increase in the railroad mileage of China and there is reason to believe that in this development American manufacturers, as well as capitalists, will have a large share. There are now in China only 350 miles of railway, but more than ten times this amount is not only projected, but is being actively pushed forward, with the prospect of completion at a comparatively early date. When it is realized that China's first railroad was opened in 1876 from Shanghai to Wusung, a distance of 14 miles and, owing to native prejudice and superstition, was soon bought up by the local authorities and destroyed, the extent of the projected lines will be better appreciated. American railway concessions in China up to the present time are confined to a single but very important line, which is to connect Canton, the great commercial center of southern China, with Hangkow, an interior city of great commercial importance. This line is about 600 miles long and passes through a rich and important agricultural section having a population of about 60,000,000, and tapping rich iron and coal areas. The concession covering this road was granted in April, 1898, under an agreement executed by the present Chinese Minister at Washington. Americans prominently connected with this enterprise include Hugh J. Grant, Samuel Thomas and Thurlow Weed Barnes of New York, George J. Bippens of Indiana, and the Carnegie Steel Company. The present chief engineer of the Chinese Imperial Railway system is Capt. Watson W. Rider, an American, under whose supervision a number of American locomotives

and considerable quantities of steel rails have been imported.

The American representation on the international tariff commission will be announced soon after the signing of the protocols, and it has already been decided that the chief member will be General Appraiser Sharretts, now on duty at New York. Mr. Sharretts is regarded as a thoroughly equipped tariff expert, and in addition to his service of many years on the Board of General Appraisers, he has always been called upon for suggestions in the framing of tariff bills by Congress. When appointed he will receive any communications concerning the proposed tariff that American manufacturers may desire to furnish him. Officials here consider it important that American manufacturers should supply data concerning their products with special reference to market values in this country, in order that the ad valorem basis may be properly adjusted and that the specific equivalents may be correct in all cases.

W. L. C.

S. R. Calloway, president of the American Locomotive Company, in an article in the Saturday evening *Post* says: "The value of the recent criticism in England of American built locomotives is still to be demonstrated. So far, American builders have had an ever increasing demand from abroad. This demand has, within the last two years, been limited by the willingness of the American shops to meet it. No general effort has been made within that period to secure foreign orders because the American manufacturers have been unable to keep up with the domestic demand. Foreign orders that have been filled have been practically unsolicited. They are based undoubtedly on the satisfaction that our machines gave in actual use in the past. This, it seems to me, is the best answer to any criticism."

The J. I. Case Threshing Machine Company, Racine, Wis., are planning to build a modern steel structure, to be approximately 125 x 350 feet, for their new boiler plant, to which reference was recently made in these columns. It will be equipped with the proper machinery to turn out from 1500 to 2000 traction engine boilers per annum.

## The Locke Steam Vehicle Engine.

An improved type of steam engines adaptable for vehicle use has just been placed on the market by the Locke Regulator Company of Salem, Mass. The new departure in the design of this engine is that the locomotive style of link and valve is employed in place of the ordinary piston valves used in connection with the commonplace ball bearing automobile engines.

The engine is neat and compact. The cylinders are 2½ x 3½ inches, developing 4½ horse-power. They are made of the best quality of gray cast iron. The frame is made wholly of composition gun metal. The connecting rods are steel drop forgings; the boxes are of bronze. On each side of the cross heads V-shaped double slides are provided. The two main bearings are wide and heavy, being 1½ inches in breadth each side of the sprocket, where the strain of the entire running gear of the carriage is encountered. The valves are made tight by being scraped to their seat. They are set to cut off so as to use steam expansively. The pistons have double rings pinned in their places so as to insure tightness. Packing boxes contain glands and the nuts are held by steel springs so as not to change their position. The small bearings and steel pins are hardened in order to secure the longest possible period of endurance and life to the bearings. The cylinders are provided with heavy asbestos jackets covered with cloth and painted. The engine is also provided with oil pockets, which are very essential in a plain bearing engine running at high speed. The engines are equipped with ⅜ or 5-16 inch sprockets. The weight of the engine is 40 pounds.

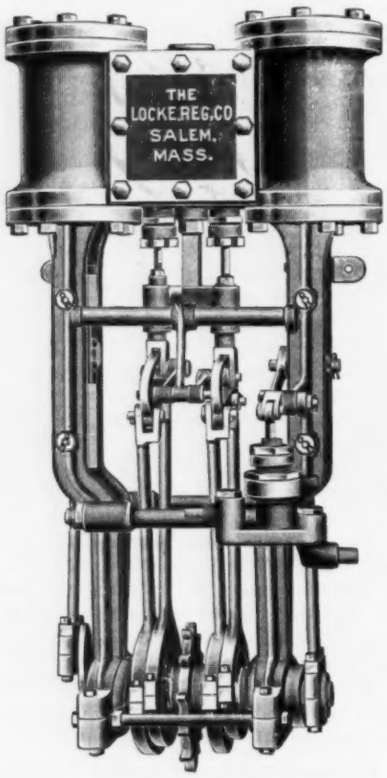


*Fig. 1.—Front View.*

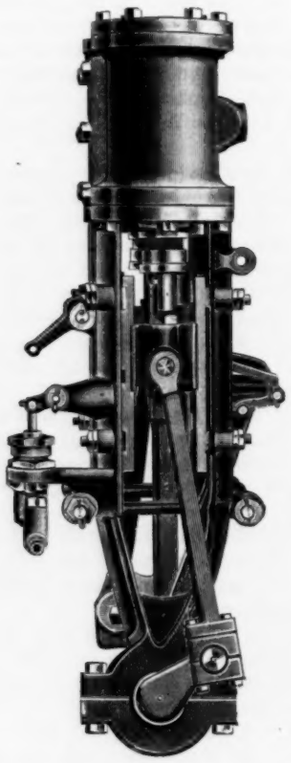

*Fig. 2.—Side View.*

THE LOCKE STEAM VEHICLE ENGINE.

**An Installation of Schniewind Coke Ovens.**—The United Coke & Gas Company have, in addition to the contract for 200 Schniewind coke ovens with the Maryland Steel Company, Sparrow's Point, Md., closed a contract with the Michigan Alkali Company of Wyandotte, Mich., for the erection of 15 Schniewind coke ovens at Wyandotte. The coke will be used for burning lime, and the ammonia and gas will be used in the manufacture of soda ash. Tar will be the only product which will be sold in the open market.

## Central American Notes.

LA LIBERTAD, C. A., August, 1901.

The construction of the new railway line from the port of La Union to the capital, San Salvador, is nearly assured. Sufficient capital has been obtained to build as far as San Miguel, and Don Pedro Calderon has left for New York to obtain the funds necessary to complete the line to the interior. The importance of La Union, on the Bay (or Gulf) of Fonseca, close to the confines of Honduras and Nicaragua, with a safe harbor for ocean steamers on the Pacific, makes this line of great importance. All the southern portion of Salvador and the Western section of Honduras will be opened up to foreign commerce. We may expect to see many of the rivers of the interior spanned by steel bridges before long, thus making it possible to keep up communication with the coast the year round, regardless of tropical floods. The government of General Regalado has taken a hand in the matter, and before many months Salvador will be able to export large quantities of coffee, sugar, indigo and ores through La Union from beyond the Lempa.

The Burrell claims which have been pushed by our Government are now in the hands of Minister Zaldivar, who represents the republic of Salvador at Washington. Dr. Zaldivar is expected in Salvador within a few days to confer with his Government and bring the reclamation to a mutually satisfactory issue for both Governments.

The commerce of Costa Rica with the United States during the last fiscal year in exports amounted to $3,851,899 and imports $1,240,950. Guatemala exported to the United States $2,111,264 and imported $1,101,963. The total exports of the five republics to the United States, consisting principally of coffee, spices, ores and precious woods, amounted to $8,877,226, and the imports from the United States, composed of machinery, groceries, lumber and manufactured goods, made a total of $4,207,141, thus leaving a balance in favor of Central America of $4,617,085.

The intervention of Nicaragua in the revolution in Colombia has brought Central America indirectly into the Colombia-Venezuela difficulty, making the storm center at the Isthmus of Panama. Our American exporters to said section of Spanish America would do well to keep thoroughly informed regarding the movements of the two countries, because war is next to certain at any moment. This would mean the closing of many of the ports and possibly the interruption of traffic for a limited period across the isthmus, till the arrival of an American squadron. The blacks and half-breeds in the province of Panama are sure to rise, and their well-known tendency to pillage and incendiarism should be forestalled by our Government. This can easily be done in accordance with treaty rights existing between the United States and the republic of Colombia.

It is difficult to predict what may happen in Venezuela; the ultra-native population is favorable to Castro, but those who have interests in the asphalt trust expect aid from the revolutionary party. Ex-President Andrade is sure to be a prominent factor in the Venezuela-Colombia imbroglio. That European interests will now watch for advantages from a commercial and political point of view goes without saying, and if our people do not keep thoroughly advised about this situation, which will embroil all the northern section of South America, we may have to lament before long the loss of not only our prestige, but all future commercial possibilities in all the territory north of Brazil on the Atlantic, and Peru on the Pacific.

C.

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The increase in cars and locomotives ordered each month this year over the orders placed during the same time last year continues for June and July. The summary of the orders noted by the *Railroad Gazette* shows 4024 cars and 43 locomotives ordered in June, 1900, against 10,118 cars and 297 locomotives in June, 1901. For July, 1900, the figures are 6070 cars and 40 locomotives, against 8339 cars and 85 locomotives ordered in July, 1901. The totals for the first seven months indicate that about 70 per cent. more locomotives have been ordered so far this year than were ordered in the same period of 1900 and about 80 per cent. more cars. The June car orders are divided as follows: Box, stock and refrigerator cars, 4990; coal and ore cars, 4576; flat cars, 230, and passenger cars, 322. The division of the July car orders is: Box, stock and refrigerator cars, 5730; coal and ore cars, 1917; flat cars, 340; tank cars, 100, and passenger cars, 252.

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## New Equipment at the Plant of the Kilbourne & Jacobs Mfg. Company.

A great many improvements are projected at the plant of the Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, which when completed will, in addition to increasing the capacity of the works and facilitating the output, constitute one of the most modern installations of mechanical and electrical machinery in the country. The company manufacture scrapers, plows, wheelbarrows, cars and carts.

A new power and engine house is to be constructed at a central point in the plant, conveniently situated with respect to the handling of coal and ashes, and in this new building, which is to be of brick, steel and slate construction, are to be located the new engines and dynamos which will generate the power that will be required in the several departments. The steam engines throughout the plant will be replaced by motors. In the new power house will also be located the auxiliary machinery that goes to make up a modern power installation—namely, special outside center packed feed water pumps, capable of handling water at 200 degrees F.; an extra large feed water heater, which will work in conjunction with a water purifying device, for precipitating the carbonates and sulphates of lime and magnesia in the feed water before same get into the boilers; a return line vacuum pump, service pumps, and a compound duplex air compressor capable of supplying between 500 and 600 cubic feet of free air a minute. The latter machine will be equipped with a device for cooling the air in stages while it is being compressed, and its large size indicates the extent to which this modern power will be utilized for driving rivets, drilling, chipping, calking, wood boring, hoists and painting, &c.

The engines will be of the tandem compound type and will be direct connected to the generators. The two dynamos will be specially designed and will be of 200-kw. capacity each. They will generate a three-phase 60-cycle alternating current at 240 volts pressure. This will be the first installation of alternating current electrical apparatus for power purposes in Columbus and one of the first in Ohio. The beauty of this electrical system lies in its flexibility and adaptability, the reduction in repairs, the small amount of wear and tear, and its easy working. The current will be used for arc and incandescent lighting, in addtion to furnishing power for driving the individual motors in the several departments. A new design of electrical welding apparatus will be installed, which can only be operated with alternating current. The engines are being specially designed, with extra heavy fly wheels, in order to meet the running requirements of the generators, which will operate in parallel.

There are several new and large buildings projected, and a force of men is now at work putting a second story on the main office building, which will provide a large and well lighted drafting room.

In the shops many changes will be made, and between 20 and 30 new machines will be installed in the different departments. Several of the large size new machines will have individual motors to drive them, thus doing away with considerable shafting and the resultant belt transmission losses. Plans are now being developed for a heating system which will use the exhaust steam from the engines. The steam will be circulated throughout the shops at atmospheric pressure, and the condensation will all be returned to the boilers. These changes are well under way—the majority of the contracts having been let—and it is expected that by the first of the year the proposed buildings will be completed and all of the new machinery will be ready for operation.

# The Design of Angle Rolls.—II.

BY WILLIAM HIRST, TRENTON, N. J.

### Modern Designs.

The two principal designs of passes used in modern practice for rolling angles are those shown in Figs. 7 to 10. These passes and their setting in the rolls have been evolved from the earlier forms shown in Figs. 4, 5 and 6, and adapted to the three-high system. Figs. 7 and 8 represent the straight sided passes, which appear to be the most popular; Figs. 9 and 10 show the curved or winged form, which, unlike the straight sided pass, are susceptible of wide variation in the details of their construction. Each form of pass has its advantages over the other, and each its distinctive features aside from mere outline.

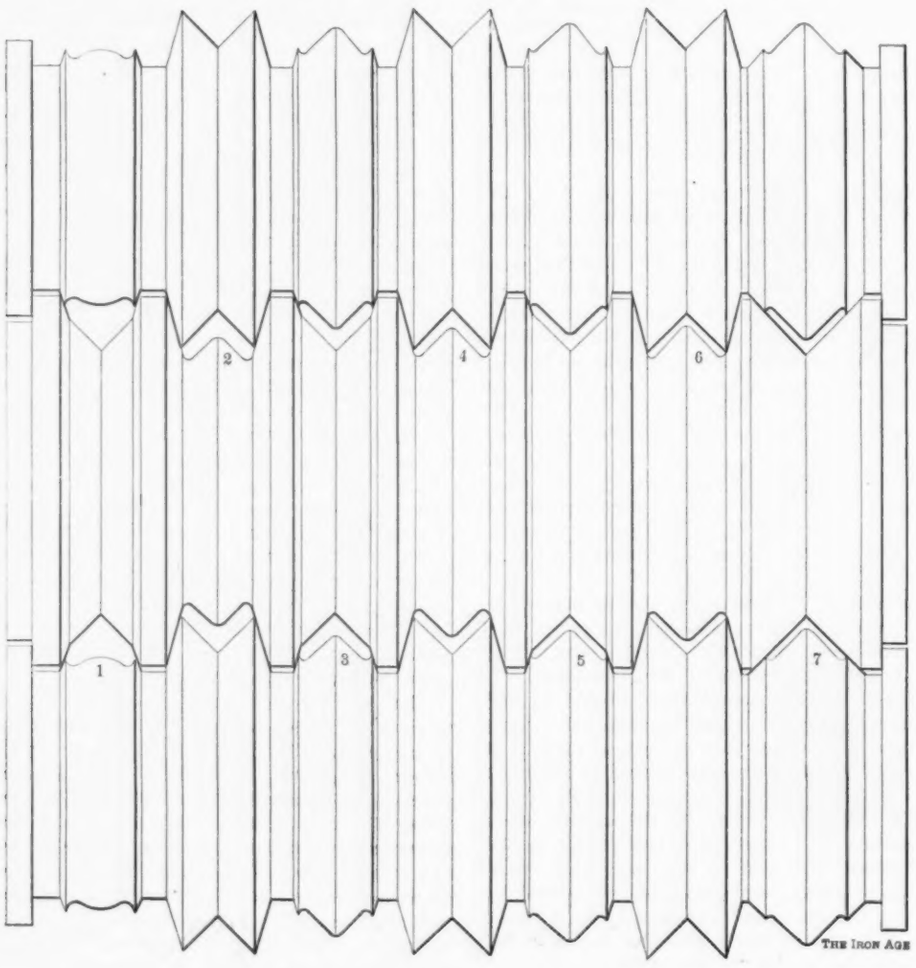


*Fig. 7.—A Modern Design, Straight Sided Passes.*

DESIGNS FOR ANGLE ROLLS.

Providing the pressure is the same all over the tendency of the working surface of a roll is to move away from its work in a line at right angles to a line drawn in the plane of the axes of the rolls touching the extremes of this surface. In all passes where the pressure is on both sides of a collar or a groove, as in those for producing even sided angles, the lines of this resistance on both sides of the pass combine in one direction—in other words, where the lateral roll pressures opposing each other are balanced they resolve into a common stress tending to spread the rolls apart in a line directly across their axes. In uneven sided passes, such as angles with uneven legs, the stress becomes angular to the axes because the forces are unbalanced, and for the purpose of being better able to treat this angular stress, in practice and theory we divide it into transverse, across the axis of the roll, and lateral or endwise pressures. The latter may be nothing at all, or it may be of such moment as to make it difficult to keep the rolls in place on account of the passes having the heaviest draft springing the rolls more than those having the least, which is liable to be the case in rolling T sections or angles of very uneven legs. Assuming a line drawn at right angles to the axes of the rolls to be vertical and one parallel to be horizontal, a vertical projection of the different areas of passes will approximate the comparative values of the roll pressure required by the different forms. Comparing the straight and curved sided passes here shown, which are for the same sized bar, Figs. 12 and 13, these values are in proportion of 1 to 1.208, or 20.8 per cent. in favor of the straight pass. On the other hand it will be seen that by bending the legs of the angle down, as in the curved passes, we lessen its hight and its horizontal projection, which, represented in figures as before, is as 1.4 is to 1. This means that for each inch in the length of the leg the straight pass must be cut about ¼ inch deeper into the roll than the curved pass, which is equal to ½ inch from the diameter. This may not be of much importance in some instances, but might be the last straw in others, and while the straight pass has the least projection and requires less roll pressure than the curved the latter does not require the roll to be cut as deep, which means greater strength. So far these advantages may be said to offset each other and to make the use of either form of pass a mere matter of choice, but to go further it will be seen that the curved pass takes up 20 per cent. more space than the other, which is often an important item. This and advantages in operation mentioned hereafter seem to justify the use of the straight pass.

In practice it is natural to divide a pass, or rather the section representing the pass, by a line drawn through the largest diameter, if the different parts cannot be re-

ferred to by name, so in referring to the side of an angle pass it is meant one leg or the other. If the sides of a pass reflect at the same degree of inclination to the axis of the roll, and to a like extent, and if these sides are of equal hight, they will have the same horizontal projection and the pressures on each side of the pass are balanced, as stated before. Should, however, one side be longer than the other, causing a corresponding disparity between their hights, the side pressure will be only partly balanced, which results in the end thrust of the rolls. Manifestly, then, any form of pass which tends to equalize the hight of the sides is an advantage, however slight. The passes whose outlines are given in Fig. 13 are of the proportion of an angle 2 x 2½ inches. Of the straight sided one the difference between the hights of the sides is 0.35 inch, that of the curved one 0.19 inch. By bending the long leg of the latter down a little more, or by making the curved portion of both sides of the same radius and extending leg tangentially a distance equal to the difference, the side of this section would be of equal hight. To this practice, however, some ascribe the tendency of the bar to creep over toward the long side of the pass in the finishing rolls.

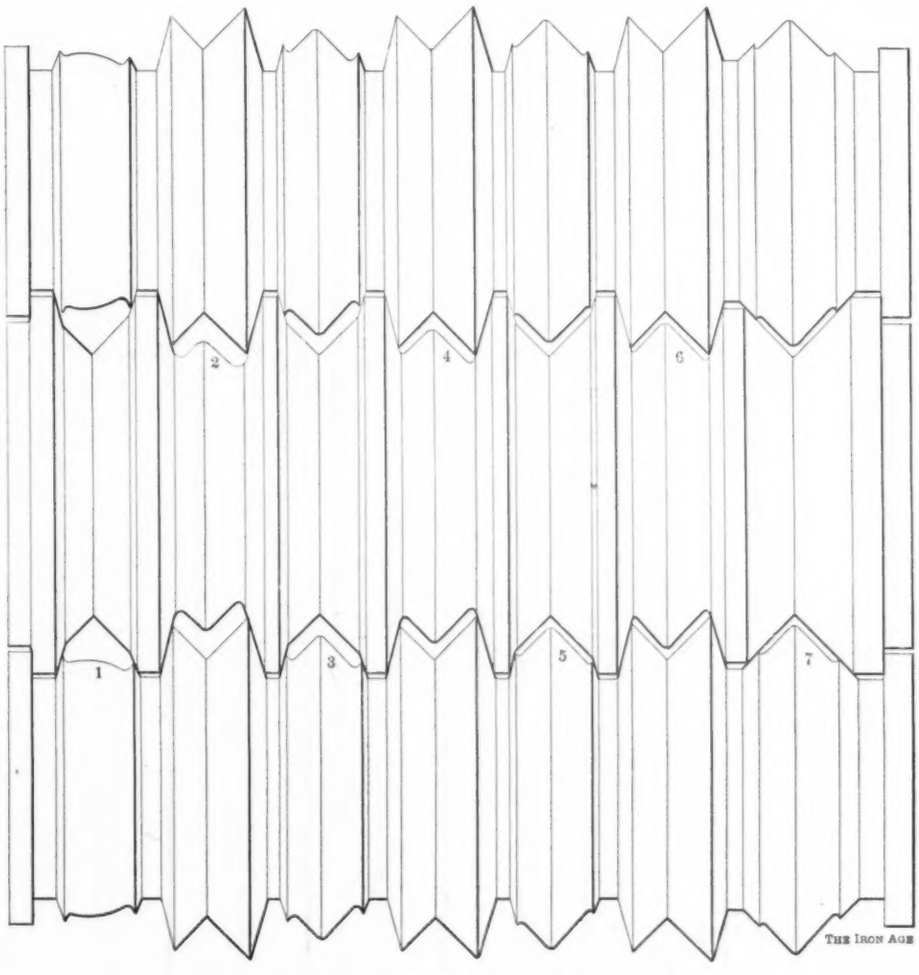


*Fig. 8.—A Modern Design, Straight Sided Passes.*

DESIGNS FOR ANGLE ROLLS.

**The Leader and the Finishing Pass.**

The last or finishing pass of a series is, of course, made to conform to the section required. It is not relied upon to effect any considerable reduction, but more to give a smooth finish and the highest degree of accuracy in size and shape. The pass preceding, the "leader," as it is sometimes called, must be designed to fill the last or finishing pass and in such a manner that the accuracy or finish of the bar may not be impaired by unnecessary reduction. It should also be designed, particularly in the case of the curved passes, in view of what kind of billet or pile the bar is to be made from, as this pass indicates the characteristics of the whole series. The laying out of the leader of the straight passes involves nothing more than an adherence to the details specified in regard to the thickness of the legs, length and the radii of the corners. It will be readily seen, however, that there may be a large variety of shapes of wing passes laid out between the two extremes, shown in Fig. 15. The one having the least bend is often used for a very thin section when a square billet is to be used. Originally the idea of bending was for the purpose of using a flat pile to make the bar from; the form is still used by some for the purpose of avoiding the acute angles and consequent weak corners of the working collars, which are characteristic of the straight passes. In brief, the principle is to bend the legs down until the lines drawn from the centers of the circles upon which the arcs are made to the outer end of the section are parallel to each other. The root of the angle being 90 degrees this makes an arc of 45 degrees. In all cases of bending it is difficult to bend an extreme edge and for this reason the edge of the section is carried out tangent to the arc for a distance equal, at least, to the thickness of the leg. As the leg will only bend within the inside length of the angle, it is begun at twice its thickness from the corner, and bent into an arc of 45 degrees, as before stated. In Fig. 12 the arc begins 0.5 inch from the point and ends 0.2 inch from the end of the leg. Making allowance for shrinkage the length of one side of the pass for a 2 x 2 inch angle would be 2.04 inches. Then 2.04 inches — 0.5 + 0.2 = 1.34 inches, the length of the arc. Necessarily using the same center for both the inside and outside lines, the inside (of the angle) will be the longest, and to correct this as far as possible the measurement is taken on the neutral line.

Having the length of the arc the radius may be easily determined, as by the following: $\frac{l \times \frac{180}{45}}{3.1416} = r$, $l$ representing the length of the arc and $r$ the radius.

**Position of the Passes Between the Rolls.**

In setting the passes in the rolls, both sides are set at the same angle in their relation to the axis of the roll. As to the position of the pass between the rolls there is some difference of opinion. This may not be so much a difference in opinion as a difference in conditions, but, unless practice indicates otherwise, it may be set with a line drawn through it at a point half way in its hight coincident with the pitch line of the rolls. It will be noticed that the straight side passes are set with the inside of the angle downward and the bent passes with the point down, the reverse of the former. In the straight passes, Figs. 7 and 8, the billet is entered in the first pass, as shown by the broken lines, so that one of its larger diameters must be reduced to the root of the angle. In these passes, as has been explained in reference to Figs. 1, 2 and 3, the greatest draft is at this part, the middle of the section. In equal sided passes this gives the bar a tendency to bend, as it leaves the rolls, toward the inside, or to the parts of the pass having less draft. An unequal sided bar will, in addition to this, bend more or less toward the long leg. These two combined sometimes make the delivery of the bar bad, unsafe and difficult to control. In practice a bar is never expected to run out straight of its own accord; it is looked for and made to bear in some one way, preferably downward, on the lower guide. This guide, further aided by gravitation as well as the influence of the opposite roll, has a better and more perfect control over the bar, and in most cases the only one necessary. However, as will be seen, top and sometimes double guides are required. For these reasons it is natural to set the straight sided section in the rolls point upward to best secure or turn to advantage the natural tendencies of the bar when under the influence of the rolls. In the curved pass it will be seen that the draft is about equal and is, therefore, somewhat different in this respect from the straight one, and, as far as the draft is concerned, it does not appear that there is any decided advantage either way. In a set of three rolls there are two collar rolls used for the curved passes, the top and the bottom, while for the straight passes there is but one, the middle. One or two collar rolls may be used for either form of pass, but it seems that the best arrangements are as shown in Figs. 7, 8, 9 and 10. In Figs. 7 and 8 the angles of the working collars are very acute with sharp corners, and unless these rolls are made of steel or very tough iron they are liable to crumble away if any work is put on or near them, while those in the curved passes can be made more or less obtuse and are, therefore, much better able to resist the pressure brought upon them. By turning the working collar of the straight passes on the top and bottom rolls it duplicates the part that is likely to suffer most from wear. The passes work in the numerical order shown, and as the top and bottom rolls are turned exactly alike it is immaterial which position they occupy, and if a top or bottom roll collar should break they can be turned upside down and worked as before.

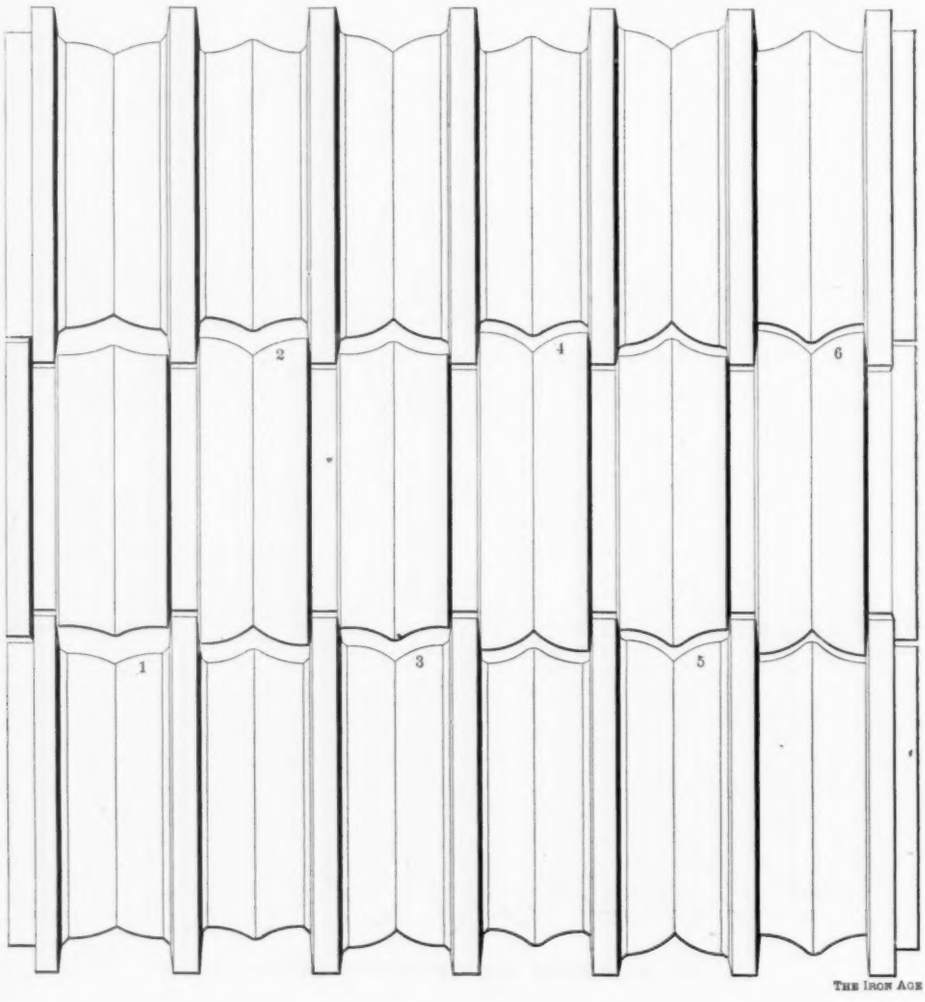


*Fig. 9.—Curved or Winged Form.*

DESIGNS FOR ANGLE ROLLS.

**Difference in Diameters.**

Although the difference in the diameters of the rolls at the different parts of the pass may be considerable, yet in the case of any equal sided bar the opposing rolls may be made to balance each other in their influence on it, but in the case of an unequal angle there will be greater difference between the rolls on one side of the pass than on the other. As a bar cannot leave the rolls faster than the speed of the smallest of the two opposing diameters, between which the draft is being effected, it is self evident that the larger diameter must slip. If the slip is the same on both sides of the pass the effect on the bar is neutralized, but if the difference in the diameters on one side of the pass is greater than on the other the delivery of that side will not only be slower, but the slip must be greater. Passing a bar between two straight rolls, one of much larger diameter than the other, the tendency will be to drive it away from the larger one or to lap the bar around the smaller. This influence is manifest in rolling the uneven angle; the sides of the pass being angular to the axis of the rolls, the effect of the large diameter is to cause the bar to twist on its axis. This action can be prevented by the roller in the majority of cases by the proper manipulation of the guides, and in a few instances by the rolls themselves; in extreme cases it can be partly neutralized in the design of the rolls through a peculiar distribution of the draft. This accomplishment is one of the refinements of roll designing which can only be successfully undertaken by those who are masters in the art. The conditions favorable and unfavorable to it are so varied and interwoven that a clear explanation is exceedingly difficult. The underlying principle, however, is to so lay out the first passes that the draft will be somewhat heavier in the slow part of those that show the tendency to twist.

**Twisting.**

Twisting is a common difficulty in rolling uneven angles, and the natural remedy would seem to be to turn the pass in the rolls so that the ends of the legs would be in a line parallel to the axis of the rolls. This is, however, precluded by the fact that it would give the sides of the pass different angles relative to the rolls. This in itself is no objection if only one thickness or weight were required, but when the rolls are required to be spread apart to roll different weights the increase in thickness, which should be common to both sides, would be disproportionate. In this particular the bent pass has an advantage over the straight one, inasmuch as the long leg can be bent down without materially affecting the relative thicknesses when the rolls are separated, so that the diameters on both edges of the section may be made nearly or quite the same. In practice where the length of one leg does not exceed the other more than 25 per cent. the arcs of the two sides may be made the same, and the extra length extended, as before stated; but where the difference exceeds these proportions it may be better to make the long leg bent to an arc of proportionally larger radius, as shown in Fig. 12.

Modern practice requires that rolls for rolling angles shall be capable of producing different weights of the same size length of leg, which is accomplished by adapting the rolls to be spread apart to increase its thickness. Rolls for 2 x 2 inch angles, from which the illustrations are drawn, should, according to the standard, produce five different thicknesses, 3-16 to 5-16 inch inclusive. To have a special set of rolls for each thickness would

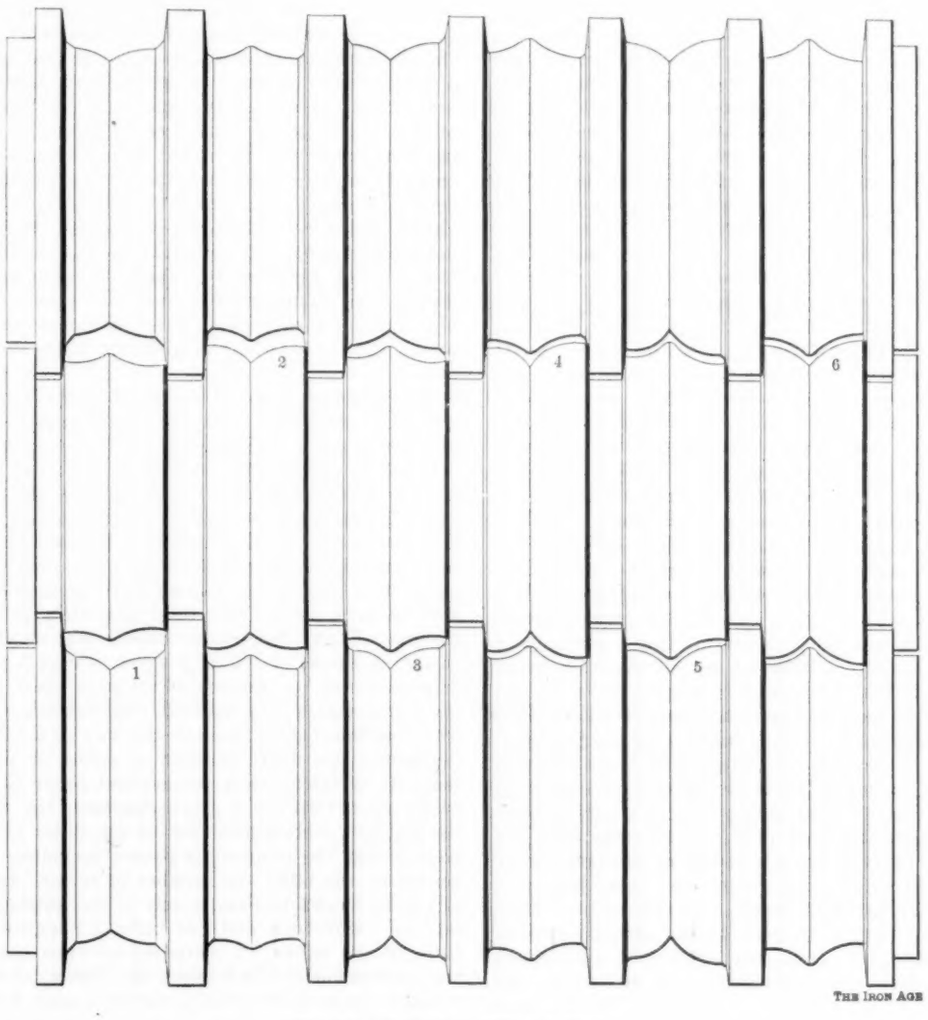


*Fig.* 10.—*Curved or Winged Form.*

DESIGNS FOR ANGLE ROLLS.

be very expensive and unnecessary, especially as it is found practicable to increase the thickness in the manner just stated. This, however, has its limitations. With the straight passes it is found that the legs increase in length equal to the amount added to the thickness. From this it will be readily seen that to attempt to get all the different weights from the same pass would be practically impossible. Aside from the fact that to increase the thickness of a pass, by separating the rolls, would also increase its length of leg a like amount, the passes would not work well, if at all, because the draft between each pass, being a fixed quantity relatively, cannot be changed by the simple manipulation of the rolls, or adjusted to suit the different thicknesses, and being proportioned to the least section it would be insufficient for the heaviest. To obviate this two or more finishing passes of different thicknesses are turned in a separate pair of rolls, and in the operations of rolling one or two passes, No. 6 or Nos. 5 and 6, are omitted when rolling the heavier weights. By thus taking the bar from one of the thicker passes to the finishing rolls the necessity of spreading the rolls to any considerable extent is avoided. To increase the thickness of the leg the rolls must be spread 1.414 times the amount. With straight passes the increase is uniform all over the section, but with the bent passes it is not. In the latter the proportion between the root and the edges of the section is as 1 to 1.414, for the reason that at that part the edges are drawn directly apart while at the root oblique. The effect of this is to increase the draft at the edges in the latter form of pass, and so far as its influence on the working of the passes is concerned it is generally regarded as beneficial; in fact, passes with purposely thickened edges were thought to be of such advantage as to warrant an embodiment of the idea being covered by letters patent. (Swift & York, rolls for rolling angle iron, No. 159,978, February 16, 1875.)

**Cracking the Corners of the Bar.**

In rolling iron angles the tendency to crack at the edges has always been a source of trouble and anxiety to roll turners, and it is generally accepted that unless the material is of fairly good quality cracks and slivers will seriously impair the appearance and usefulness of the bar. In the patent referred to the inventors state that "our invention is designed to enable the workmen to produce angle iron of uniform consistence, strength and finish throughout and free from cracks and fissures," and that "the object of this thickening is to afford a preponderance of metal at those parts (the edges) in order to counteract the tendency to crack or separate along the web in the final pass." They also take the occasion to disapprove of such passes as the last one of Fig. 15, as follows: "We are aware that it has been proposed to roll angle iron in passes, one-half of both sides of whose wings were to project, by an abrupt angle, in a horizontal direction from the apex; but such form would be manifestly impracticable, the re-entrant angle or crease formed thereby in that part of the web otherwise most liable to separate in the act of rolling, tending to produce flaws and rifts, which destroy or impair the merchantable quality of the iron." The drawing accompanying the patent shows the edges of the two passes preceding the last to be considerably thicker at the edges than in other parts of the section, and while the idea is correct in principle it is safe to say that if such a pass as the fifth one in the patent was used, as shown, it would be very apt to cause that which it is designed to prevent, by taking the draft off that part while the rest of the section is subjected to heavy reduction. The fact is that cracks and fissures can be and are made in the preceding passes, to be opened and appear in the last.

Whenever expedients of this kind are thought to be of value in any particular case, and they often are, they should be formed at the beginning and not at the end of the series. In rolling structural steel, however, in a well designed series of passes, there is very little, if any, tendency to crack in the manner described and, therefore, preventives of this kind, as a rule, are superfluous. By "an abrupt angle" in the patent referred to it is presumed that sharp corners are meant. In good practice such corners are always rounded except, of course, when they are required in the shape of the section, but when rounded even slightly the objection found against them as stated above disappears.

In determining the maximum size of section that may be safely and economically made in a train of any particular pitch we should naturally be guided by current practice. This, however, varies so much that it is difficult to establish a limit. A relatively large section requires that the rolls be cut so deep that they have not the strength necessary to effect the draft that would be given in ordinary practice; yet by modifying the latter, sections may be rolled that otherwise would be impossible. In instances where it has been compulsory a section has been made on a train generally held to be too small for the purpose by making the draft lighter and increasing the number of passes to do the work, but, as is usual in such cases, at a loss in productiveness and by an extra expenditure of labor. As to what might be the limit ordinarily, it has been given that a roll having a length equal to three times its pitch diameter should not be cut down near the middle of its length to a diameter less than two-thirds of its pitch. A rule of this kind, however, can have but little value, as the resistance of the bar, variable with every grade of metal and degree of heat, is an unknown quantity, as is the reliability of the rolls themselves; nor can these factors be determined with any satisfactory degree of accuracy, therefore an estimation of their values must be left to that intuitive knowledge or the sixth sense which seems to be the natural concomitant of a successful artisan, which comes from his familiarity with the things he uses.

In like manner must the draft in the passes be considered. Usually the last, and particularly in the case of angle rolls using the wing pass the next to the last pass, determines the size and section of the billet from which the bar is to be made. The straight sided pass having legs of equal length requires a square and the wing a more or less flat or oblong billet. Between the billet and the finished section the draft is distributed through the series of passes in the manner best calculated to aid the rolls in their work. Into this calculation is to be taken the loss of heat and the increasing density of the metal as the operation of rolling progresses, also the probability of abrasion of the surface of the pass from the hardening metal, which may make the bar rough and unsightly. The best that can be done in the way of a calculation to determine the draft through a series of passes is to make their thickness a geometrical series increased between each term by a given constant; the thickness of the finished section and that of the billet being the extremes and the number of passes including that represented by the billet the number of terms. In the series of passes shown in Figs. 9 and 10 the finished section is 3-16 or 0.1875 inch and the billet 1.1 inches thick; the ratio of the series 1.2, increased between each term by the constant 0.03. This gives the following thicknesses for each pass: 0.1875, 0.223, 0.2743, 0.3454, 0.4455, 0.588, 0.7938, 1.1, the last representing the size of the billet.

**Apportioning Draft by Rule.**

The impossibility of apportioning draft by rule is at once apparent to those who study the question. The method just given can only illustrate what might better be styled a system, the figures giving an idea of its application. The use of an invariable rule for the distribution of draft is an impossibility, and a rule which is made variable ceases to be a rule. Circumstances sometimes require modifications in this particular. For instance, it is not always possible to get the exact size of billet desired; the section may be unusually large for the train, cutting the rolls so deep as to seriously impair its strength; the passes may be very wide, requiring greater resistance, in which a heavy draft would tax the strength and power of the train too much; or the shape of the section may be such that a moderately heavy draft might split or tear the bar apart. All these instances show that the question of draft is secondary and subservient to more important details and is, therefore, not governed by a rule suitable to any particular case. It is well to favor some passes as an aid to the better production of different thicknesses of section. A standard 2 x 2 inch angle varies from 3-16 to 7-16 inch

inclusive, with a mean of 5-16 inch. It is seen that if two finishing passes are provided in the finishing rolls, if such are used, for 3-16 inch and 5-16 inch respectively, it will only be necessary to separate the rolls 1-16 inch, measuring parallel to the leg in the straight passes, to get 3-16, ¼, 5-16 and ⅜ inch, the two heaviest being taken from the fourth and the lightest from the sixth pass to the finishing rolls. For these reasons and others which differ in almost every case the distribution of draft has been done by rule of thumb almost exclusively and doubtless will continue so.

**Distribution of Passes in the Rolls.**

Compared with the construction of the passes themselves their distribution in the rolls is of minor importance, yet in this particular there are considerations that cannot be overlooked without impairing their efficiency to a large extent. Sometimes, out of consideration for the strength of the rolls, the deep grooves are placed at or near the ends, but as a rule the passes are set so as to follow each other in regular order. In spacing them they should be set far enough apart so that the collars will have ample strength to resist any pressure that may be put on them. In the case of angle rolls, however, the cross section of the collar is of such form that any considerable distance between the passes is not required for strength alone, yet they should be far enough apart to allow a proper adjustment of necessary guides and guards. The collars forming the sides of the pass should not be made any larger in diameter than is needed for the complete inclosure of the bar; and when there is nothing requiring them to be otherwise they may be made of equal diameter, which greatly simplifies the work of turning them and avoids a possible source of confusion. It should be so arranged that the ends of the roll should have a common diameter approximating the pitch diameter of the set, so that the brasses or boxes may have sufficient bearing to receive the end thrust, which is sometimes considerable. In addition to this and the convenience of furnishing means whereby the pitch diameter may be readily ascertained it avoids the possibility of the annoyance of having the larger collar engage the brass of the opposite roll—an occurrance which should be prevented. The lock formed by the overlapping collar cannot be relied upon to take the end thrust, as they rapidly wear away. Further, the middle roll is in contact with the hot metal twice as much as the others, which causes it to expand lengthwise, as well as diametrically, a great deal more than the top and bottom, which endangers a closely fitted collar.

It was once the practice, whenever possible, to include all the passes of a series in one set of rolls, as shown in Figs. 4 to 8, but with the demand for a greater variety of sizes and a better finish on the bar, the several finishing passes were turned in separate sets of rolls, as in Figs. 9 and 10. With an increased production in view passes have been further divided and distributed into three or more sets of rolls, but this is a matter to be determined by local circumstances. Unless each set of rolls can have its separate attendant and these can work without interfering with each other, so that the different sets of rolls can be worked at the same time, no material benefit will result. Aside from this, however, the separation of the finishing passes has the advantage of permitting independent adjustment, which is a very important thing sometimes.

To determine the number of passes in the case of angle rolls is largely a matter of the ability of the rolls and the train to reduce an available billet to the section required, but sometimes a feature in the rolls themselves requires that one should be dropped or added. For instance, it would be unwise to enter the billet in

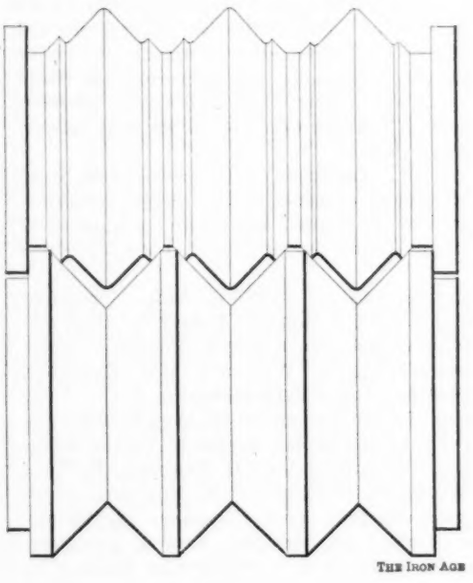


*Fig. 11.—Finishing Passes.*

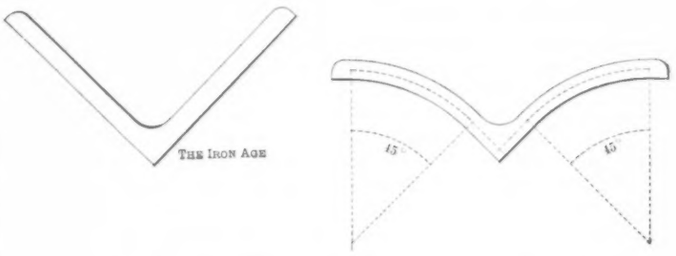


*Fig. 12.—Straight and Curved Sided Passes.*

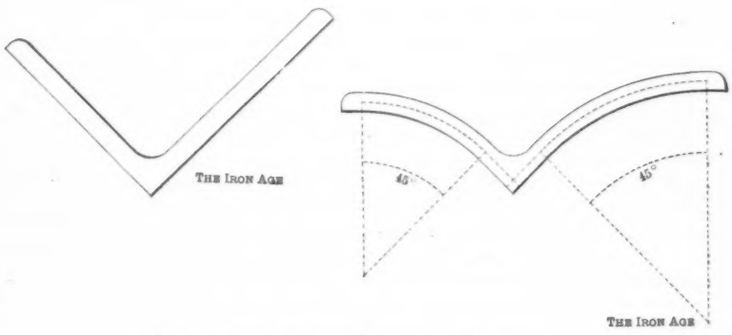


*Fig. 13.—Straight and Curved Sided Passes.*

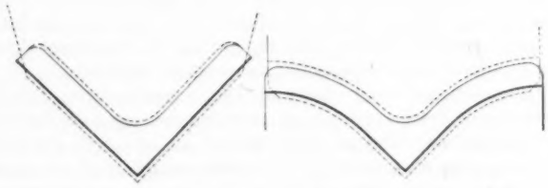

*Fig. 14.—Straight and Curved Sided Passes.*

*Fig. 15.—Extremes of Wing Passes.*

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a pass like No. 2, Figs. 9 and 10, where it is seen that the corners of the collar closing the pass would engage the billet first and bear the heaviest pressure, which would break the corners away. As to the form of the passes individually there is no special rule to follow, the object in general being to produce the desired section, and to this end, the character of the passes having been determined, the best and most convenient shape of billet available is taken and a series designed to gradually reduce it to the form and size of section required. With the form of billet in mind and the general characteristics of the passes having been determined upon it is not a difficult matter to lay out a series along the lines previously determined upon. Each pass, of course, bears a certain close relation to its immediate neighbors; it must be analogous in form, so much so that by the action of the rolls the form of one must be capable of reformation to that of the other, and to this end the change must not be too radical.

**Position of Passes to Pitch Line.**

Having the passes laid out, it is of equal importance to determine their position relative to the pitch line of the rolls—that is, to a line representing the common diameter of the rolls drawn parallel to their axes. If we were to pass a flat bar of iron between two straight rolls of equal diameter the rolls would have no other effect on it than to press its sides together; but if we turn the rolls so that the sides of the bar would be angular to the axes of the rolls (and to the pitch line) the bar passes between two cone shaped surfaces. As has been before explained, the passage of the bar through the rolls is retarded by the smaller diameters in contact with it (unless the ingoing section does not bear or touches the pass very lightly at that point; such instances as these are, however, rare exceptions). As in all cases where a large and small diameter oppose each other the larger drives the bar toward the smaller, which gives the bar a tendency to twist, which is more or less difficult to control. In extreme cases the usual effect is to create distortion in one of its various forms, also to spoil the alignment of the bar. This bar, set at an angle to the pitch line, represents one leg of an angle bar. If we add another leg of equal length, the reverse of the first, we counteract the effect of the first; but if one of the legs of the angle is longer than the other it is still manifested to a greater or less extent. By varying the draft at different parts of the pass, as has been mentioned before, the effect of the difference in diameter on the opposite sides of the pass may be modified, but not entirely counterbalanced. It will be seen that the largest diameters are directly opposed to the smallest and, as has been shown, that while the bar moves at or near the speed of the smallest part of the pass, the larger diameters tend to accelerate it. Now, drawing a line through the apex of the angle, if there are larger diameters on one side of this line, as in the case of angles of unequal legs, this tendency to accelerate the passage of the bar will cause it to bend toward the opposite side; if the legs are of equal length the sidewise motion is balanced, the diameters being the same. Again, if the pass is set too much above or below the pitch line the average diameter of one roll becomes greater than the other, and as before, the bar will bend toward the smallest. Thus it is seen that if the pass is set too much above the pitch line the tendency will be to raise the bar up, if too much below it will be downward.

For reasons given in the foregoing part of this article angle passes are generally set with the inside down, the claim being that the guides have better control over the bar. As angle rolls have to be capable of being spread apart to get different thicknesses, the sides must have the same inclination relative to the axis of the rolls, but if, in the case of bars having very unequal legs, the position of the pass were altered so that the diameters on both sides of the pass were the same, their inclination would be different, so that when the rolls were separated the thickness of the legs would increase disproportionally, which would not do. It is not impossible, however, to design a set of rolls to work in this way and still be capable of producing weights of uniform thickness.

In designing any kind of rolls there are innumerable details arising from purely local conditions which cannot be anticipated, therefore the writer feels that he ought to state, what many will recognize, that the matter here presented is not and cannot be made in an article of this kind complete in the sense that would enable any one to produce a set of rolls in all refinement of detail. Appreciating this it has been the object to give the underlying principles and general features in the design of rolls of this kind, such as are met in every day practice. There are many points that would bear elaboration profitably, which is expected to be done in future in treating shapes which are generic of the common angle.

## A Discussion of Reciprocity.

President Theodore C. Search of the National Association of Manufacturers has called a special meeting of the Executive Committee of that organization for September 4, to consider the question of reciprocity in all its phases, after which a call will be issued for a national reciprocity convention. This action is taken as the result of much dissatisfaction among manufacturers, especially those who are in the export trade, and strong pressure will be brought to bear on Congress at its next session to give the relief desired.

The Executive Committee of the association comprises representatives of some of the largest manufacturing concerns in the United States, and a number of them have in the past been prominent high protective tariff men.

The committee consists of W. C. Nones, president Kentucky Wagon Mfg. Company, Louisville; Summerfield Baldwin, president Warren Mfg. Company, Baltimore; George T. Coppins, Walworth Mfg. Company, Boston; Benjamin Atha of Benjamin Atha & Co., Newark, N. J.; Richard Young, president Richard Young Company, New York; Daniel Ripley, president United States Glass Company, Pittsburgh; John H. Converse, Baldwin Locomotive Works, Philadelphia; P. E. Montanus, president Springfield Machine Tool Company, Springfield, Ohio; George M. Sargent, president Sargent Company, Chicago; Charles F. Brooker, treasurer Coe Brass Mfg. Company, Torrington, Conn.; W. H. Hitchcock, president Weis & Lesch Mfg. Company, Muncie, Ind.; August H. Vogel, manager Prester & Vogel Company, Milwaukee; Lucien Sharpe, treasurer Brown & Sharpe Mfg. Company, Providence, R. I.; Hamilton Carhart of Carhart & Co., Detroit, Mich., and the president, treasurer and secretary of the association, as *ex-officio* members.

The intention is to have all the manufacturing interests in the country, whether members of the association or not, represented at the convention, so as to get the actual opinion of all industries that are affected. It will be called before December, so that its proceedings can be used in the effort to have Congress give them proper consideration.

**Steel Rails for Queensland.**—Some months ago the Queensland Government invited quotations for 13,400 tons of steel rails and 958 tons of fish plates, tenders to be lodged by June 11. For the first time in such contracts a condition was introduced that the material should be landed in Queensland. It was found on opening the box at Brisbane that no tenders had been submitted. In London, however, six tenders were received, the lowest being that of the Moss Bay Steel Company. This company's prices vary according to whether the material is to be delivered in Brisbane or Townsville, prices at the former port being £6 10s. 6d. for rails and £8 6d. for fish plates, and at the latter port £6 16s. 6d. and £8 6s. 6d. respectively. Two classes of rails and fish plates were specified—namely 61 and 42 pound. At Brisbane 3100 tons of rails and 263 tons of fish plates of the heavier and 6300 tons of rails and 382 tons of fish plates of the lighter class were to be delivered, while Townsville was to have 3000 tons of heavy rails, with 252 tons of heavy fish plates, and 1000 tons of light rails, with 61 tons of light fish plates. Seemingly the English company quote average prices for both classes.

# Notes from Great Britain.

Offices of *The Iron Age*, Hastings House, Norfolk Street, Strand, London, W. C., Aug. 2, 1901.

### Changes in London.

The reorganization of the London firms who are affected by the United States Steel Corporation goes on apace. Col. Millard Hunsiker has been appointed chairman of the London board—a very popular appointment. I am now asked by the American Steel Hoop Company, whose address has been 78 Gracechurch street, London, to announce in this column that their London address is now 71 and 72 King William street, London, E. C., their telephone number has been changed to 2660, Avenue, and "Wakefully, London," is now their registered cable and telegraphic address. The National Steel Company, of the same address, have also moved to 71 and 72 King William street. Their cable and telegraphic address remains "Notremetre, London." I further understand that Arthur Holland, who has had control over here of the interests of the American Steel & Wire Company, is resigning his position at the end of this month. I believe he is going to travel for some little time before making any announcements as to his future. Doubtless many of your readers will recognize the address of 71 and 72 King William street, as being that of the Carnegie Steel Company. Thus as the outcome of the steel consolidation these three companies to begin with are all housed under the same roof. I understand that D. S. Guthrie, who has been acting as general foreign sales agent for both the American Steel Hoop Company and the National Steel Company retains his connection. There is, however, some little perturbation in the offices of the various companies concerned, particularly among the junior clerks, as to what comes next.

### Well Received.

Robert Geddis, representing Jones & Laughlins, Limited, of Pittsburgh, has been spending some time over here to spy out the land on behalf of his company. He has every hope that his firm can do a big business in Great Britain. Judging by the number of large firms who are anxious to handle Jones & Laughlins' products it would seem that Robert Geddis is not peculiar in this opinion.

Indeed, there can be no doubt that for plates, beams and structural steel material generally there is a great future on this side the Atlantic. Considerations of space, coupled with fire insurance requirements, are compelling builders to put up fire proof buildings and to build much higher than has hitherto been the case in England. It may be said that every new warehouse is built with structural steel, while the enormous number of flats and tenement houses now being built all over London make a great demand upon structural steel manufacturers.

Recent inquiries point also to the conclusion that there is a distinct movement among British shipbuilders in favor of American ship plates. It is now recognized that very generally the American plates are more easily worked than the British. The punching test which, although rough and ready as a test is still a good one, is all in favor of the American article. Thus the shipbuilder prefers the more malleable steel made in America because of the ease with which rivet holes can be punched, while for working the American plates are more easily manipulated. In addition to this, too, the American plates show no signs of handling during the process of manufacture, due, of course, to the fact that while they are being finished they are carried over posts topped with revolving wheels. I am informed, although I cannot say so positively, that this practice cannot be found in England. Altogether as long as American practice in the manufacture of steel continues to be in advance of that obtaining in this country, prospects for American steel products are uncommonly rosy. Difficulties of freight must be in due course circumvented, and I have no doubt this will be done. The feeling is prevalent that with an American chamber of commerce or association with the necessary organization and the exercise of a little pressure freight rates all round could be reduced.

### The Other Side of the Shield.

While the foregoing remarks of mine would appear to be optimistic, it is just as well to see what the Britisher has to say. A Barrow correspondent on this topic writes as follows:

"The much talked of American competition in the steel trade has up to now had but very small effect on British makers, except in so far as it has tended to keep prices down, but it is interesting to know the experiences of shipbuilders and others who are large users of steel plates, and who have had some large deliveries from American makers. The American system of trade necessitates large deliveries, which with the freight have to be paid when the goods reach this country, with the consequence that loss is occasioned in interest in stocking and in haulage, as well as loss occasioned by having to warehouse material for a large period before it is required for constructive purposes. These drawbacks on American plates exported to this country as compared with British produce, which can be delivered as it is wanted, have been found to represent about 9 shillings per ton, and thus British makers have in this item a large margin to work on. Recently makers have been keeping their prices well within the margin, with the result that very few orders are going over to America, and there is the further significant fact that specifications for new British shipping tonnage invariably insist on the supply of British manufactures."

With reference to the last sentence I may perhaps remark that it is not unknown on the Clyde among shipbuilders to purchase American plates and afterward gravely assure the inquiring journalist that they are British! It is, however, quite true that recently so much business has not been done in American steel, apparently because it cannot be delivered. I would reiterate that if the trade is to be held over here there must be no capriciousness in the supply of the material. Let us have regular shipments and the selling agents will do the rest.

### The Subsidy Question.

American visitors assure me that the subsidy bill will pass through Congress next session. The question is attracting a good deal of attention among British politicians, and only recently a Parliamentary committee was appointed to inquire into the effect of foreign steamship subsidies upon British trade. It cannot conclude its labors this session, and after hearing further evidence will recommend its own reappointment next year. Of course the subsidies proposed under the American act are different in their nature from those into which this commission has been inquiring, but in the long run a subsidy is a subsidy, whether it goes into the building of a ship or into the running of the ship. On this point it is stated that the subsidy of $200,000 a year paid to Elder, Dempster & Co., one-half by Jamaica and the other half by the British Colonial Office, has proved eminently satisfactory to the shipping firm in question. Elder, Dempster & Co. are now considering the advisability of duplicating the service, and if they do they intend to ask for a further subsidy. It is necessary, however, to remember that whereas this subsidy suits the ship owners uncommonly well, the banana growers of Jamaica are by no means so satisfied, as they find great difficulty in shipping their fruit to this country, owing to the fact that the available space on the Bristol steamers is monopolized by the owners themselves, who are the principal shippers of bananas bought, of course, at the lowest current prices. Some time ago, when the shipping ring conferences were being held the Donald Currie Line had to promise not themselves to do any trading, but only to carry the merchandise of *bona fide* merchants. The result of this has been that often they have had to give out half the load when they could themselves have purchased timber or iron or steel and sold at the other end at a profit. It seems fair, however, if subsidies are to be granted, that they should be for the purpose of facilitating transport and not of giving the ship owners a financial advantage over the jobber pure and simple.

### Railways and Trade.

The diminution in dividends of the leading railway companies of this country is starting, and has alto-

gether a depressing effect upon business prospects. The Northeastern dividend has fallen from 5¾ to 4½ per cent.; the Southwestern from 4¾ to 3½; the Great Northern pays 2¼ per cent. on its "preferred," as against 3 per cent. last year, and this only by drawing $300,000 out of the reserve fund. To make matters worse the Great Midland Railway Company pay only 1½ per cent. instead of 2¾ per cent. on their deferred stock, and even then carry forward $50,000 less than last year. These sweeping reductions are common to all the railways, with the possible exception of the London, Brighton & South Coast. The result of these unpleasant figures has been to turn the minds of railway engineers to electric traction. Already the District Railway has sold itself body and soul to the Yerkes syndicate. Mr. Langdon, the chief engineer of the Midland Railway Company, believes that the application of electricity to heavy railway work is certain to lead in the long run to economy, even with long distance traffic. As the working expenses of the railways, according to the official returns, have gone up from 59 to 62 per cent., the outlook is not encouraging in face of the enormous capital outlay which may be required if any of these railways are to be even partially electrified. In this connection an important letter has been written to the *Times* by Charles T. Yerkes, in which he sets forth very clearly what are his proposals. They certainly would appear to be wise, if not generous. He says, *inter alia:*

"At the present time I am chairman of the Metropolitan District Electric Traction Company, and we have a subscribed capital of £1,000,000. The subscribers are all gentlemen of means and I may say affluence. Our propositions were:

"1. That we would electrify the Metropolitan Railway, furnish all the rolling stock, also a power house and substations, and do everything and furnish everything necessary to change and operate their road by electricity, charging therefore the sum of ¾ pence for each passenger they might carry. There were some things, such as keeping their buildings in order, that they were to provide for. But I cannot see any way that they would make such a statement as they made in their report—that we would charge them £291,000 for what cost them £101,000.

"2. The second and most important proposal was that we would work or lease the whole of the railways and general undertaking of the Metropolitan Company, subject to the statutory obligations of that company, guaranteeing to the Metropolitan Company a net yearly revenue sufficient to pay the whole of their debenture and other fixed charges and their guaranteed and preference interest.

"As to a yearly dividend upon the ordinary share capital we found that the average dividend for a period of seven years terminating on June 30, 1900—that is to say, prior to the competition which the company have had to meet with the Central London Railway—was £3 6s. 11d. per annum. We offered to pay on the aforesaid capital stock yearly dividends in perpetuity at the rate of 3½ per cent. The dividend this half year is at the rate of 2¼ per cent. per annum."

### Prices and Wages.

I append herewith the result of the accountant's inquiries into the returns of 12 selected Midland firms for the months of May and June, upon which wages are fixed. It will be seen that the average selling price was £6 19s. and 2.55d. The statement of the different classes of iron sold at the net average selling price was as follows:

| | Tons. | £ | s. | d |
|---|---|---|---|---|
| Bars | 19,279 | 7 | 1 | 0.41 |
| Angles and tees | 1,060 | 7 | 0 | 7.69 |
| Plates and sheets | 1,335 | 8 | 0 | 0.17 |
| Hoops, strip and miscellaneous | 6,508 | 6 | 9 | 3.81 |

The odd figures have been omitted from the quantities, which total 28,183 tons, which is an increase of 2505 tons, as compared with the last statement. The average selling price is a decrease of 8 shillings 5.62 pence, and in the ordinary course it would have justified a reduction of 6 pence per ton in puddlers' wages, and 5 per cent. in those of mill men. The following resolution was, however, passed: "The operatives having on a recent occasion waived their right to an advance of wages to which they were entitled, the employers, under present circumstances, waive their right to a reduction on the present occasion.

"*Resolved*, That the rate for puddling remain 9 shillings per ton basis price, and all other wages in the usual proportion to continue until October 5."

### The Water Tube Boiler.

I have before indicated the keen interest taken in the experiments as to the relative value of the cylindrical and Belleville boilers in the two naval ships, "Hyacinth" and "Minerva." It is typical of the general muddle in which we are that no two persons are now agreed. For example, the *Engineer* says as a result that the Admiralty may feel thoroughly justified in proceeding to fit the ships of the navy with properly designed cylindrical boilers until such time, say five years hence, as they have reason to believe that a really satisfactory water tube boiler is available. On the other hand, however, *Engineering* says that in spite of all that has been said in dispraise of the Belleville boiler, and notwithstanding that it is not the best type of water tube boiler that could be devised, there is proof enough that it works well under certain favorable conditions. In the recent run of the cruisers "Minerva" and "Hyacinth" at Gibraltar, the cylindrical boilered ship "Minerva" arrived at her destination first, and it has therefore been assumed by those either ignorant of the subject or wilfully anxious to mislead the public, that the "Minerva" with her cylindrical boilers had won the race and had proved herself superior to her sister and competing vessel, the "Hyacinth," fitted with Belleville boilers. The writer proceeds: "We need hardly say that the absolute reverse is the case; supposing, of course, the programme set down has been carried out. There was no idea of a race in the competition. Both ships were to go to sea and develop a given horse-power, equal in both cases, for as long a period as their fuel lasted. Apparently the "Minerva's" coal has given out first; so that, with Belleville boilers, a certain weight of fuel has produced a given horse-power for a longer period than has been the case with cylindrical boilers." S. G. H.

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The Fore River Ship & Engine Company are fast developing their plant at Quincy Point. The patterns for the steel stems of the United States battle ships "Rhode Island" and "New Jersey" have been sent to the foundry. The stems will weigh 36 tons each. The company will soon lay the keels. The company are setting up four new trip hammers—one with 2500 pounds power, one with 1500 pounds power and two with 1200 pounds power each. A ship shed is being built alongside the cruiser "Des Moines," which the company are constructing. The shed will be 325 x 490 feet, and 100 feet from the ground to the trusses. It will be large enough to shelter two battle ships and two cruisers. The company will also erect a 75-ton folding traveling crane, which will be 50 x 50 feet at the base of the tower and 144 feet high, and will run alongside Bent's Creek. The arm will have a reach of 90 feet from the face of the wharf. The creek is to be converted into a dry dock.

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In Boston the iron and brass molders' demand for a working day of nine hours is now under consideration by the Founders' Association, which has been allowed ten days, until August 22, in which to reach a decision. The union states that many of the larger firms have granted the demand. There will be no strike pending the decision of the association.

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The directors of the Taunton Locomotive Company have voted to build a new foundry at an expense of $20,000, and the company will destroy some of their old buildings. The company have been much cramped for room for over a year.

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The United States & Canada Coal & Iron Company, organized at Portland, Maine, have filed a certificate of organization with the Maine Secretary of State. Their capital is $500,000, with nothing paid in. John F. Eskeldson of Arlington, Mass., is president, and John F. Thompson of Somerville, Mass., is treasurer.

# The Proposed German Tariff.

The following is a translation of the proposed rates of duty for Germany, the unit of weight being 100 kg., or about 220 pounds:

*Iron and Iron Alloys.*

| Tariff No. | Proposed classification. | Proposed new rates of duty. Mks. | Pfg. |
|---|---|---|---|
| 777 | Pig iron and nonmalleable iron alloys | 1 | 00 |
| | Iron tubes, including tube fittings of nonmalleable cast iron— | | |
| 778 | More than 7 mm. in thickness— | | |
| | Rough | 3 | 00 |
| | Worked | 4 | 50 |
| 779 | 7 mm. or less in thickness— | | |
| | Rough | 6 | 00 |
| | Worked | 9 | 00 |
| 780 | Rollers of nonmalleable cast iron— | | |
| | Rough | 3 | 50 |
| | Worked | 10 | 00 |
| 781 | Art castings and other fine castings, not malleable | 24 | 00 |
| | Nonmalleable cast iron, not otherwise mentioned— | | |
| 782 | Rough, weighing per piece, net weight— | | |
| | More than 100 kg | 2 | 50 |
| | More than 40 kg. and up to 100 kg | 3 | 50 |
| | More than 5 kg. and up to 40 kg | 5 | 00 |
| | 5 kg. or less | 7 | 00 |
| 783 | Worked, weighing per piece, net weight— | | |
| | More than 100 kg | 4 | 00 |
| | More than 40 kg. and up to 100 kg | 6 | 00 |
| | More than 5 kg. and up to 40 kg | 9 | 00 |
| | 5 kg. or less | 12 | 00 |
| 784 | Blooms, puddled bars, ingots, mill bars, billets, crucible steel in ingots | 1 | 50 |
| 785 | Malleable iron in bars (rolled, forged or drawn), also shaped (*façonnirt*), and hoop iron— | | |
| | Not more than 12 cm. long, for recasting | 1 | 00 |
| | Weighing 1 kg. or over per linear meter | 2 | 50 |
| | Weighing less than 1 kg. per linear meter | 3 | 00 |
| | With patterns or ornaments impressed in the rolling | 5 | 00 |
| | Sheets and plates— | | |
| 786 | Rough, scaled, straightened, dressed or varnished— | | |
| | More than 1 mm. in thickness | 3 | 00 |
| | More than 0.5 mm. and up to 1 mm. in thickness | 4 | 50 |
| | 0.5 mm. or less in thickness | 5 | 00 |
| 787 | Ground, polished, lacquered, browned or artificially oxidized— | | |
| | More than 1 mm. in thickness | 5 | 00 |
| | More than 0.5 mm. and up to 1 mm. in thickness | 5 | 50 |
| | 0.5 mm. or less in thickness | 6 | 00 |
| 788 | Tinned (tin plate) or otherwise coated with other common metals or alloys of common metals— | | |
| | More than 1 mm. in thickness | 5 | 00 |
| | More than 0.5 mm. and up to 1 mm. in thickness | 5 | 50 |
| | 0.5 mm. or less in thickness | 6 | 00 |
| | NOTE TO NOS. 786-788.—In the case of sheet iron less than 5 mm. in thickness and cut otherwise than rectangularly, the duty will be increased by 15 per cent. | | |
| 789 | Sheet iron, corrugated, ductile, grooved, or with embossed surface— | | |
| | Rough | 5 | 00 |
| | Worked | 8 | 00 |
| 790 | Sheet iron, except that specified in No. 789, pressed, flanged, welded, rounded, drilled or bored— | | |
| | More than 1 mm. in thickness | 5 | 50 |
| | 1 mm. or less | 7 | 00 |
| 791 | Wire, rolled or drawn, including shaped wire, polished, lacquered or coated with other common metals or alloys thereof, having a thickness of— | | |
| | 1.5 mm. or more | 3 | 50 |
| | 0.5 mm. and less than 1.5 mm | 4 | 50 |
| | Less than 0.5 mm | 6 | 00 |
| 792 | Ditto, ditto, rough or worked otherwise than as above mentioned, having a thickness of— | | |
| | 1.5 mm. or more | 3 | 00 |
| | 0.5 mm. and less than 1.5 mm | 3 | 50 |
| | Less than 0.5 mm | 5 | 00 |
| 793 | Spiral pipes, rolled or drawn; also tube fittings— | | |
| | Rough | 8 | 00 |
| | Worked | 15 | 00 |
| | Other tubes, rolled or drawn— | | |
| 794 | Rough— | | |
| | 2 mm. or more in thickness | 6 | 00 |
| | Less than 2 mm. in thickness | 10 | 00 |
| 795 | Worked— | | |
| | 2 mm. or more in thickness | 12 | 00 |
| | Less than 2 mm. in thickness | 20 | 00 |
| 796 | Rails for railways, cogged rails, flat rails, switch rails, switch tongues of malleable iron—all these also drilled or riveted in the lower flange; railway sleepers, fish plates and bed plates | 2 | 50 |
| 797 | Axles and parts of railway wheels (including hubs, tires, frames and rims), railway wheels and sets of wheels | 3 | 00 |
| | Malleable cast iron, forgings, and other wares of malleable iron, not elsewhere mentioned— | | |
| 798 | Rough, weighing per piece, net weight— | | |
| | More than 25 kg | 4 | 50 |
| | More than 3 kg. and up to 25 kg | 6 | 00 |
| | 0.5 kg. and up to 3 kg | 8 | 00 |
| | Less than 0.5 kg | 12 | 00 |
| 799 | Worked, weighing per piece, net weight— | | |
| | More than 25 kg | 7 | 00 |
| | More than 3 kg. and up to 25 kg | 10 | 00 |
| | 0.5 kg. and up to 3 kg | 13 | 00 |
| | Less than 0.5 kg | 24 | 00 |
| 800 | Construction pieces of wrought iron, whether painted or not | 6 | 00 |
| | Steam boilers and drums of wrought iron, together with collected parts of same, and boiler fittings— | | |
| 801 | Boilers with more than 10 similar tubes of a width amounting to 300 mm. or less, clear; and boilers of all kinds of nonmalleable cast iron— | | |
| | Weighing per piece, net weight— | | |
| | 5000 kg. or under | 8 | 00 |
| | More than 5000 kg | 6 | 00 |
| 802 | All other kinds of boilers | 5 | 00 |
| 803 | Cask buoys for anchors; reservoirs for gas, water and other purposes; recipients and other apparatus for factories, such as breweries and foundries, riveted, pressed or welded, including the fittings and collected parts of such recipients and apparatus | 6 | 00 |
| | Tube joints, cocks, valves, slide valves and similar fittings of wrought iron for steam boilers and drums, reservoirs and similar apparatus, and for conduits— | | |
| 804 | Not in combination with other common metals or alloys thereof, weighing per piece, net weight— | | |
| | 10 kg. or over | 7 | 00 |
| | Less than 10 kg | 9 | 00 |
| 805 | In combination with other common metals or alloys thereof, weighing per piece, net weight— | | |
| | 10 kg. or over | 9 | 00 |
| | Less than 10 kg | 12 | 00 |
| 806 | Vises of all kinds, anvils and anvil beaks, anchors and crowbars; hammers weighing more than 10 kg. per piece, net weight | 5 | 00 |
| 807 | Blocks and reels for pulleys; windlasses and other portable lifting tackle | 7 | 00 |
| | NOTE.—Detachable chains and cables for such lifting tackle are dutiable separately. | | |
| 808 | Spades, shovels, hoes, kitchen pans, &c., coal scoops, ladles for use in foundries, fire irons, plowshares, and loam boards for plows | 6 | 00 |
| 809 | Forks, large, for hay, manure, turnips, coke, road metal and similar purposes | 10 | 00 |
| 810 | Forged scythes and sickles and chaff cutters | 15 | 00 |
| 811 | Hand saws and saw blades— | | |
| | Blades for circular, band and fret saws | 20 | 00 |
| | Other saw blades and hand saws | 15 | 00 |
| 812 | Files and rasps— | | |
| | Not more than 16 cm. long | 40 | 00 |
| | More than 16 cm., but not more than 35 cm. long | 25 | 00 |
| | More than 35 cm. long | 10 | 00 |
| 813 | Drills not otherwise mentioned; pincers; cutters for vines and roses; hedge shears; pruning shears; sheet metal shears; sheep shears; chisels; planes; tube cutters; ratchet drills; machine knives; screw cutters; cutting compasses | 20 | 00 |
| 814 | Bits, gimlets, cutting files, measuring tools [rulers, angles, compasses (except cutting compasses), gauging rods, &c.] | 40 | 00 |
| 815 | Hammers weighing 10 kg. or less each, axes, choppers, pick axes, drawing knives, cleavers, meat choppers, hand screws, adjustable wrenches, vise pins, tightening tools (spanners, &c.), braces, and all other tools not specially mentioned | 15 | 00 |
| 816 | Appliances not separately distinguished for agricultural, household or industrial purposes, *e. g.*, weighing machines, not separately distinguished, flat irons, traps for animals, joints for driving belts, plows, extirpators, potato forks, harrows, hand rakes, hay rakes— | | |
| | Weighing 3 kg. or over | 10 | 00 |
| | Weighing less than 3 kg | 15 | 00 |
| 817 | Card clothing | 60 | 00 |
| 818 | Spindles of all kinds | 10 | 00 |
| 819 | Shafts, healds, mails, slays and reeds, shuttles, spools of all kinds, and similar fittings for weaving and spinning machinery | 25 | 00 |
| 820 | Bolts for fish plates and sleepers, cramp hooks, screws and rivets of wire more than 13 mm. thick, nuts and washers for screws; insulator supports; horseshoes and calkins— | | |
| | Rough | 5 | 00 |
| | Worked | 12 | 00 |
| 821 | Railway couplings, buffers, points and parts of signals | 10 | 00 |
| | Axles (except railway axles) and parts thereof— | | |
| 822 | Patent axles | 24 | 00 |
| 823 | Other— | | |
| | Rough | 6 | 00 |
| | Worked | 12 | 00 |
| 824 | Carriage springs, including railway carriage springs— | | |
| | Rough, or only polished at the edges; buffer springs | 4 | 00 |
| | Entirely polished, or worked in any other way | 15 | 00 |
| 825 | Wire rope, barbed wire, plaited wire and wire gauze, wire brushes, wire baskets, boot irons, screws and rivets not more than 13 mm. in thickness; hooks not otherwise mentioned; handles for boxes and coffins, spikes, staples, buckles (except ornamental buckles); wire springs; hooks and eyes; nails, not otherwise mentioned, with or without heads of other common metals or alloys of such metals | 15 | 00 |
| 826 | Wire tacks; staples of wire | 10 | 00 |
| 827 | Cut nails (tacks, &c.)— | | |
| | Of a length of 20 mm. or more | 12 | 00 |
| | Of a length less than 20 mm | 20 | 00 |
| 828 | Stove pipes and rings, boxes, drums, chests, baths, combs, house and kitchen utensils, revolving shutters and blinds, bells and alarms; all these of sheet iron; also parts of such articles— | | |
| | Rough | 6 | 00 |
| | Worked | 10 | 00 |
| 829 | Chains (except bicycle chains) and parts thereof— | | |
| | Rough | 6 | 00 |
| | Worked | 15 | 00 |
| 830 | Snaffles, curbs, stirrups, spurs, &c., and other riding and driving gear— | | |
| | Rough | 10 | 00 |

| Tariff No. | Proposed classification. | Proposed new rates of duty. Mks. | Pfg. |
|---|---|---|---|
| | Worked | 15 | 00 |
| 831 | Skates and roller skates | 15 | 00 |
| 832 | Building and furniture fittings, hinges— | | |
| | Rough | 6 | 00 |
| | Worked | 12 | 00 |
| 833 | Locks and keys— | | |
| | Not combined with other common metals or alloys thereof | 15 | 00 |
| | With lock bolt sockets, keyhole guards and covers, and the like, of other common metals or alloys thereof | 20 | 00 |
| 834 | Safes and cash boxes | 20 | 00 |
| 835 | Furniture (not upholstered) and gymnastic appliances, whether made of nonmalleable cast iron or not | 15 | 00 |
| 836 | Fine cutlery (fine knives, fine scissors, side arms, &c.), beads and ornamental buckles, so far as they do not come under No. 887; thimbles, corkscrews, nut crackers, steel balls, buttons (of sheet iron or not) and similar wares— | | |
| | Rough | 15 | 00 |
| | Worked | 24 | 00 |
| 837 | Wrought art wares | 24 | 00 |
| 838 | Umbrella and parasol frames and parts thereof | 24 | 00 |
| 839 | Springs not specially mentioned | 20 | 00 |
| 840 | Pens (completely finished or not) with or without gilt tips | 90 | 00 |
| 841 | Needles— | | |
| | Sewing needles, with or without gilt eyes | 60 | 00 |
| | Needles for sewing, knitting and embroidering machines | 200 | 00 |
| | Carding needles, larding pins and other needles; also fish hooks | 30 | 00 |
| 842 | Iron sand and steel shavings | 6 | 00 |
| 843 | Iron waste— | | |
| | Scrap iron; iron borings, turnings and shavings, iron filings; bar iron ends, sheet iron corners, and other iron waste only fit for smelting or fusing | 1 | 00 |
| | Hammer slag and scales from rolling; grindings; waste from tin plate not more than 5 mm. thick | Free. | |

NOTES TO THE IRON SCHEDULE.

1. The term "iron" includes "steel," for purposes of the customs tariff.

2. Flat wrought iron more than 25 cm. wide, for rolling mills, will pay duty as sheet iron.

3. Drawn or rolled iron will pay duty as wire, without regard to its sectional shape, so far as the largest sectional measurement does not exceed 5 mm.

4. Iron products will be considered as "worked," in opposition to "rough," if they have undergone surface operations or alterations of form to fit them for some special purpose, to improve their appearance or to protect them against rust.

To the "worked" class belong especially all wares filed, turned, planed, ground or polished, heated, tempered or annealed after manufacture, colored gray, brown or otherwise by treating with a covering of oil, cleaned by bran or by emery, also all wares painted, varnished, lacquered, enameled, oxidized, coated with other common metals or alloys thereof (except those specified in Note 5), and all wares riveted, screwed or otherwise connected. "Worked" wares also include those from which the traces of casting, forging or rolling have been partly or wholly removed. Moreover, it makes no difference whether the roughness is removed immediately on manufacture or by a special process, or whether any alteration of the form of the article is entailed thereby.

Wares which have received a finished appearance immediately on manufacture are also to be considered as "worked."

On the other hand, the cutting of screw threads on the ends of tubes, on screws and on nuts, preliminary preparation for testing for flaws, the removal of seams, &c., the smoothing of broken surfaces, the making of rivet holes, and the boring of holes with or without a worm (so long as there are not special provisions for perforated and drilled articles), the furbishing of certain parts, or a rough coating of oil paint or tar, or of graphite priming, are not to be considered as "working."

5. Iron in bars, wire, sheets and tubes, and other iron wares, which have been mechanically coated with copper, copper alloys, nickel or aluminum, or which have been chemically nickeled, are subject to a surtax of 50 per cent., so far as no special regulations are applicable. If special rates of duty apply to the above named articles in a polished or generally "worked" condition, duties will be collected according to these special rates.

6. The combination of iron wares with other materials only affects their classification for duty (so far as not specially provided for in the category for iron goods), if it is provided in other tariff headings that wares even if only partly consisting of some other material yet have to pay duty as goods entirely manufactured of such material.

On Thursday of last week three torpedo boat destroyers, the "Truxtun," "Whipple" and "Worden," were launched from the yards of the Maryland Steel Company, at Sparrow's Point, Md. The vessels are exactly similar, each being 260 feet long over all, 23 feet 3 inches beam, 14 feet 8 inches deep, with a draft of 6 feet and a displacement of about 433 tons. They will be propelled by twin screws actuated by two triple expansion engines capable of developing 8300 indicated horsepower, and giving a speed of 30 knots an hour. The boats will be armed with a 3-inch rapid firing gun, two torpedo tubes and six 6-pounder rapid fire guns.

W. Vernon Phillips of F. R. Phillips & Sons Company, who has placed some very heavy American tools in English and Continental steel works, has instructed shipment of a large quantity of their Zero metal to London and Germany, as well as to New Zealand. He is negotiating the installation of an American type tin mill on the Continent.

## Lake Iron Ore Matters.

DULUTH, MINN., August 17, 1901.—The August movement of ore is not likely to equal expectations, and may be less than July's. Not on account of any trouble at mines, for there is none, nor at upper lake docks, for these and the roads are carrying out their portion of the demands, but from the bunching of ships at lower lake ports, the shutting off of as few channels of distribution by the banking of some furnaces, and the congested conditions at the lower end. All this must lead another winter to a consideration of the facilities there and the improvement of receiving ports, by new dock room, or in some other way. So far the increase of facilities for 1901 is in the way of new ships alone, and new ships are scarcely needed so much as new unloading records. There are under contract with the American Shipbuilding Company (the lake yards) 19 steel freight ships of the largest size, varying in capacity from 4000 to 6500 gross tons. These are all to be out about the opening of navigation of next year. It is significant that, as a year ago, none of these vessels are for the mining interests, but are all for independent or outside concerns. The 19 ships will have about 2,000,000 gross tons seasonal capacity, and will cost in the neighborhood of $5,000,000. Their capacity, figured in grain, will be 60,000,000 bushels. It is not improbable that the increase in grain movement out of the lakes for 1902 will be very large, but it cannot be anything like that. The ore movement will be increased also, as will other freight, in all probability, so that it is not impossible that there will be a fair volume of work for this vast addition during 1902, always providing business conditions do not change for the worse before that time passes. The yards of the American Shipbuilding Company are about full for all winter. In addition to this company other yards are busy, and new yards, like that at Collingwood, are coming into line with a considerable business.

It is probable that there will be ships enough on the lakes by another spring to move 30,000,000 tons of ore, besides other freight, if as quick dispatch can be given them as has been the rule in some past years. And if this is construed as an argument for lower freights it may be said that a ship will make more money at 60 cents a ton and immediate dispatch than at 80 cents and a 10 or 11 day round trip.

### The Congdon-Snyder Deal.

A sale of exceeding interest was closed on the Mesaba range a short time ago, from Chester A. Congdon and associates to W. P. Snyder of Pittsburgh, who represents the Crucible Steel Company of America, and has made a contract running over a long period to supply the St. Clair Furnace Company, now building blast furnaces at Clairton, with ore. The interesting feature of this sale rises from the fact that the land sold was explored and condemned a few years ago on account of what was thought to be the miserable physical character of the ore. Now the buyer sends out his chief furnaceman and it is found, as expected by Mr. Congdon, that the structure, instead of being bad, is remarkably good, that the ore is of a character that will act with extreme kindliness in the furnace. The buyers of this property, the s. e. ¼ of the n. w. ¼ of section 23, T 58 R 20, pay a certain sum per ton for all ore in the ground so far discovered, this amounting to $450,000, and they are given a further period of 12 months for additional explorations, all ore to be found during that time to be paid for likewise. By this extension they expect to add $200,000 more to the purchase price. Some two years ago the Lake Superior Consolidated Iron Mines bought for about $350,000 the adjoining 80 acres to the north and wanted to buy this 40, but it had not been explored, and was not for sale at the price offered then. This 40 adjoins the 160 acres bought not long ago by the Shenango Iron Company, a representative of independent ore interests, and the structure of the two is about the same. In this connection it is well to note that it is not the mining engineer who should pass upon the physical character of an ore for furnace use, but the furnaceman himself. The study of the physical charac-

ter of Mesaba ores, by locations, and the gradual changes in the characters of these ores as one moves along the range, is an important and too little followed branch of the knowledge of the industry.

A tract of 55 acres in section 4, T 58 R 17, has been sold to the Onondaga Iron Company at $75,000. The same company have bought a three-quarters interest in the n. w. of section 27, T 58 R 20, for $30,000. Explorations on the east side have shown ore of good quality.

The explorations carried on by E. F. Bradt, near Republic, for some Eastern syndicate as yet unnamed, are progressing very well, and it is said that ore may be struck any time. Ore was found in these lands years ago. It is not probable, of course, that any such quantities of ore may be found there as in the Mesaba formations, but the expectation is that the character will be excellent. The Cleveland Cliffs Company are to explore the lands to the north of Michigamme, where they have large acreage.

The Carp Furnace, at Marquette, has closed for the summer until some necessary changes are made in the stack and machinery.

The Gingrass gold locations, near Ishpeming, are to be taken under option by mining men that are of the opinion that gold in paying quantity exists there. The locations are near the Ropes, in which Corrigan, McKinney & Co. have been working the old tailings this summer.

D. E. W.

**The Champion Rivet Company to Expand.**—The Champion Rivet Company, manufacturers of the Victor boiler rivets, Cleveland, Ohio, have purchased 10 acres of land along the Allegheny River at New Kensington, near Pittsburgh, and are completing plans for the erection on this property of what they propose shall be the best equipped rivet making factory in the world. The Wellman-Seaver Engineering Company of Cleveland are now at work on the details. The new works will be much larger than the company's present plant at Cleveland. It is not proposed to discontinue the Cleveland factory, but to operate both plants. The new enterprise of the company has long been under contemplation, and much time has been taken in investigating the advantages offered by a number of locations. The Pittsburgh locality was decided upon for the purpose of getting closer both to the supply of raw material and to the Eastern market, in which the company dispose of so large a part of their output. Visitors to the Pan-American Exposition at Buffalo can see a fine display of the company's products in the West Ordnance Building, which is located south of the Government Building. This exhibit adjoins the Chicago Pneumatic Tool Company's exhibit, and visitors are given an opportunity to see the Victor boiler rivets operated upon by pneumatic tools.

**Suing an Apprentice.**—Bronson & Minor, counsel for the E. J. Manville Machine Company of Waterbury, have entered suit against John Carroll and John J. McCarthy for $100 damages, the case to come before the City Court the latter part of this month. The company sue because of an alleged violation of an agreement entered into some time ago between Mr. Carroll, his son, Francis T., and Mr. McCarthy. Francis Carroll was until recently an apprentice at the E. J. Manville Machine Works. When the strike came young Carroll went out with the other workmen, and by doing so, the company claim, he violated one of the clauses in the agreement. According to the complaint Carroll, through his father entered into an agreement with the company to work as an apprentice for at least three years. Mr. McCarthy, by attaching his signature to the document, guaranteed that Carroll should carry out the terms of the agreement. The plaintiff company claim damages for the breach to the amount of $100.

At Sharon, Pa., in the injunction case of the American Steel Casting Company against strikers, the defendants failed to appear and the injunction was made absolute. It enjoins the strikers from molesting or interfering with the men now at work or from entering upon the premises of the company.

## Machinery at the Pan-American Exposition.—V.

### The Buffalo Forge Company.

In a conspicuous position in the Machinery and Transportation Building at the Pan-American Exposition the exhibit of the Buffalo Forge Company attracts considerable attention.

The most prominent portion of the exhibit of this company consists of a stack of four steel plate fans of the standard Buffalo top horizontal discharge type placed one on the top of the other. These vary in size from a fan at the bottom 150 inches in diameter to one 60 inches at the top. The highest point of the latter is 32 feet above the floor line. The largest fan at the bottom is directly coupled to a standard Buffalo 7½ x 9 single vertical engine, with cylinder below shaft, and together with the three other fans runs at a slow speed, discharging air into the surrounding neighborhood. This stack of fans stands against the back part of the exhibit, and on the wall behind it is hung a large decorative painting, 27 feet wide and 56 feet in hight, which represents two feminine figures holding up a pictorial representation of the manufacturing plant of the company.

To the right of this stack of fans and at one corner of the exhibit is located an apparatus to illustrate the Buffalo fan system of heating, ventilating and drying. It comprises in this instance a 60-inch up blast steel plate fan with direct connected fan engine, two sections of steam heater pipes, heater casing, steam connections and other accessories. The fan in this case discharges its air through several short pipes, some of which are caused to revolve by the reaction, thus forming a cool and attractive exhibit.

The Buffalo down draft system of forge construction is illustrated by two patterns of forges. Another interesting machine is a large Buffalo steel pressure blower of the type employed for furnishing blast to foundry cupolas, and this is so arranged as to be driven by invisible means, discharging its air below the floor. A 10 x 10 Buffalo horizontal center crank engine and a 6 x 6 standard single vertical engine are also shown. A complete line of blowers built by this company is displayed. In addition to the stationary down draft forges there are portable types, such as blacksmiths' forges, riveting forges and folding forges. Of other apparatus exhibited is a planing mill exhaust fan for handling sawdust, shavings and the like, three types of blacksmiths' drills, a combined punch, shear and bar cutter, and an angle iron cutter.

In addition to this principal exhibit the Buffalo Forge Company have also supplied to the Pan-American Exposition several other pieces of apparatus which are of considerable interest. In the handsome marble structure which is to be the home of the Buffalo Historical Society—namely, the permanent New York State Building—has been installed a complete fan system apparatus for heating and ventilating the building, the fan being designed for a complete air change once every ten minutes. A novel device for washing and filtering the air which is forced into the building is installed in conjunction therewith. In the Service Power Houses at the northwest corner of the grounds has been placed a 17 x 28 x 18 Buffalo horizontal tandem compound engine with automatic fly wheel governors and self oiling system. This is one of the large engines at the exposition and is employed for driving a Westinghouse alternator for lighting purposes. In the same power house is installed a Buffalo mechanical induced draft apparatus, consisting essentially of two Buffalo steel plate fans, 200 inches in diameter, with overhung fan wheels, water cooled bearings, and direct connected 12 x 14 horizontal center crank engines, the whole apparatus placed on an elevated platform and installed to serve 17 large vertical boilers. We may also mention two 80-inch down blast steel plate fans, driven by induction motors and employed for cooling the battery of transformers situated in the Electricity Building.

## E. G. Acheson's Electric Furnace Products.

Of all the exhibits at the Pan-American Exposition that go to demonstrate the wonders of Niagara power and its application, none is more suggestive of the possibilities of the electric furnace than the personal exhibit of E. G. Acheson. Mr. Acheson is known to the world as the discoverer of the new abrasive silicon carbide, or carborundum. While many of the industries that have grown up at Niagara Falls as a result of the power development there are well represented in a thoroughly interesting collective exhibit, the exhibit of Mr. Acheson's, which is contained in a small case occupying a center aisle in the Mines Building, tells many things about the great possibilities of the electric furnace. No man in this country has had greater experience in the operation and study of the electric furnace than has Mr. Acheson. In this exhibit of Mr. Acheson's the high temperature obtained in the electric furnace is beautifully illustrated by a specimen of silica obtained by the condensation of that body from a flame of burning silicon. In the same exhibit of the examples of metallurgy are some aluminum and silicon obtained by direct reduction of alumina and silica, respectively, by carbon. A silicon-aluminum alloy is also shown.

The use of the electric furnace in synthetical chemistry is well illustrated by a finely colored specimen of carborundum. A small jar in the exhibit contains aluminum carbide, which is another illustration of a synthetical product of the electric furnace. This was obtained by heating a suitable mixture of aluminum and carbon. This compound is decomposed by water, yielding, however, methane, instead of acetylene gas. So far this carbide has found no industrial application. In 1894 this compound was described by Moissan.

The largest part of the exhibit referred to, however, consists of specimens of graphite manufactured by the Acheson process at the Niagara Falls works of the International Acheson Graphite Company. This process of converting amorphous carbon into graphite consists essentially in heating the former to a very high temperature in contact with the metallic vapors, the graphite resulting from the successive formation and decomposition of carbides. The formation of graphite from the decomposition of a carbide is illustrated by some fine graphite pseudomorphs of silicon carbide. These are obtained by heating that compound to such a high temperature that the silicon is vaporized and the carbon left behind as graphite, which preserves the form of the original silicon carbide crystals.

As commercially manufactured, graphite is made from anthracite coal, and for some purposes from petroleum coke. Specimens made from both these materials are shown in the form of lumps as they come from the furnace, and also in the finished form, as grains and powders. It has been pointed out by Berthelot and Moissan that the real test as to whether any given specimen of carbon is amorphous or graphitic is to determine whether graphitic oxide can be formed therefrom, as amorphous carbon will not yield that curious compound. The exhibition of a small test tube of graphitic oxide made from Acheson graphite is, therefore, of interest, proving, as it does, that the artificial product is a true graphite. Another test tube in the exhibit contains a specimen of an intensely black substance, called by Berthelot "pyrographitic oxide," and obtained by heating graphitic oxide to the temperature of decomposition.

Specimens of graphite electrodes illustrate an important branch of the Acheson graphite business. These are orginally made of amorphous carbon containing a small quantity of a metallic oxide, their conversion into graphite being brought about by exposure to the intense heat of the electric furnace. Electrodes made in this manner are found to have a very long life in various electrolytic processes in which the ordinary carbon electrodes would be rapidly destroyed. Their electrical conductivity is also greatly increased, a graphite electrode having but one-fourth the resistance of an amorphous carbon electrode of the same dimensions. Finally, their purity is extremely high; the associated impurities having been volatilized in the furnace, in some instances analysis showing only 0.033 per cent. ash. Mr. Acheson was among the first to avail himself of the Niagara power development, and since locating at Niagara his researches have been of vast benefit to the scientific world.

## The American Boiler Manufacturers' Association.

The proceedings of the annual convention of the American Boiler Manufacturers' Association at Buffalo last week terminated in an executive session on Wednesday afternoon. A course of entertainment then followed, which continued until late Thursday night. The visitors were favored with a theatrical party on Wednesday evening, which was greatly enjoyed. On Thursday morning they were taken by steamboat from Buffalo to Niagara Falls on the Canadian side. After enjoying the falls from the Canadian point of view, they were given a lunch at the Hotel Dufferin, Victoria Park. Special trolley cars then conveyed them down the Canadian side of the Niagara River, across the river at Lewiston and up the American side through the gorge to Niagara Falls, N. Y., whence the return trip to Buffalo was also made by trolley car. This consumed the entire day. In the evening a banquet was served in the large dining room of the Hotel Iroquois at which 140 plates were laid. The speech making which followed was prolonged to a late hour. James Lappan of Pittsburgh acted as toastmaster and filled the position admirably. A specially memorable feature of this occasion was the presentation of a gold headed cane to President Richard Hammond, as a token of the appreciation in which he is held by the members of the association. The head of the cane bears a suitable inscription. Every person present was also favored with a metallic souvenir cup with the compliments of the Chicago Pneumatic Tool Company. The cup bears representations of Niagara Falls and of the principal buildings of the Pan-American Exposition.

The managers of the World's Fair, to be held at St. Louis, Mo., in 1903, in celebration of the centennial of the Louisiana Purchase, are pushing things in a very vigorous manner. From all accounts the projected exposition is a colossal enterprise. It is to be thoroughly international in its scope and all the nations of the world will be invited by the President to participate in displaying their natural and artificial products. According to the plans the exposition will cover nearly 1000 acres of land and will exceed in size and cost the Columbian Exposition in Chicago. A large sum of money was appropriated by Congress in aid of the enterprise and the State of Missouri, the city of St. Louis and private capital have all come forward with unprecedented liberality in support of the undertaking. There seems every justification for the claim of its promoters that the St. Louis World's Fair will take a place among the finest of the world's industrial expositions.

It is reported from Glasgow, Scotland, that J. R. Ellerman of the Leyland Line has purchased the old established City Line of 14 steamers engaged in the East Indian trade, the price being nearly $5,000,000. Mr. Ellerman, according to rumor, is acting for J. Pierpont Morgan and his associates. The City Line of steamers is owned by George Smith & Sons of Glasgow. The fleet, comprising 14 vessels, has an aggregate tonnage of about 50,000 tons. With this addition and two Johnson Line steamers, recently purchased, the Leyland Line fleet, which was formerly composed of 58 vessels, with a total tonnage of 246,146 tons, will have 74 vessels and a tonnage of over 301,146 tons.

United States Consul Swiney of Cork informs the State Department that an exposition of the products and industries of Ireland will be held at that city in 1902. The site selected is on the banks of the River Lee. The people of Dublin, Belfast and other cities of Ireland have promised their support, and have already liberally contributed toward the erection of the buildings and the preparation of the grounds. The railroads have also subscribed, and, in addition, will make low rates to visitors. The Consul adds that a number of the exhibitors at the Glasgow Exposition will send their exhibits to Cork.

# The Iron Age

**New York, Thursday, August 22, 1901.**

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
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JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.


## The Concentration of Manufacturing Plants.

The expressed determination of the officials of some of the constituent companies of the United States Steel Corporation to remove some plants from one locality to another has brought a perplexing question conspicuously before the country. It is not a new issue. It has been before the parties interested ever since the formation of the great consolidations. There has always been a certain mobility with American manufacturing plants. It has been nothing unusual for a manufacturer to transfer his works to some more favored locality, although a preliminary step in many instances has been to establish branch works which gradually overshadowed the parent concern. Nor has it always been on its merits pure and simple that a removal has been effected. Special inducements from boom towns or an effort to make a last stand against dry rot have been the motives in many cases.

In fact there has been much of the abuse in the removal of plants which has characterized the establishment of many new industries. A potent factor has been the desire to turn a penny in real estate speculation, often of a very wild character. Then there has been the bonus from communities anxious, often in the most legitimate manner, to increase their importance. It is amazing how the bait of a cash subscription or immunity from taxes from a town will cause promoters and investors in new plants to overlook serious drawbacks when choosing a locality for their plant.

It is no wonder that, after gathering in every available plant identified with a particular industry, the managers of a modern consolidation find themselves face to face with the problem of abandoning poorly located, poorly equipped, antiquated or inadequate establishments and utilizing such parts of it as are worth saving.

That this often works very serious hardships upon small communities and upon groups of workingmen is obvious. In fact the owners of such plants have been seriously, and in some cases justly, blamed for abandoning those to the guarding of whose welfare they had practically committed themselves. We know of instances in which the men were encouraged to put all their savings into the building of homes and were led to assume serious obligations. These interests were sacrificed, apparently without a thought, by owners of works who jumped at the chance to sell out, generally at an unexpectedly handsome profit. They may have pleaded against the closing down or the removal of the works and the accompanying ruin of many industrious and frugal men, but there the matter ended.

The managers of a consolidation cannot well be blamed for pursuing a course dictated by their duty to the stockholders of their company. Concentration of operations is imperative in the interests of economy, and it is absolutely necessary that that surplus capacity be put into reserve which is incapable of producing goods cheaply enough.

The strike in the Western rolling mills has now, however, introduced a new element, which prudent manufacturers cannot afford to leave out of consideration. That is the attitude of a community or of its officials toward those fundamental rights which are guaranteed to every citizen and corporate body. Where property is no longer sacred, where demagogues control a community, the owners of industrial plants are burdened with very serious risks. The danger involved may overbalance many otherwise important considerations, and may justify a course repellant to humanity and to the regard for the interests of others.

The present has been regarded as an opportune time to effect some of the schemes of concentration of plant which an active business has thus far rendered impossible. We believe that strictly economic considerations have influenced the officials of some of the constituent companies of the United States Steel Corporation in deciding upon the removal of smaller works to other localities. In fact that movement has been in process in some branches for a considerable time. But it is obvious that the developments during the present strike have introduced a new factor which was not taken into account before. Let it be hoped that it will prove a salutary lesson to the great majority of law abiding men in all our industrial communities who, through indifference or through timidity, allow the demagogues and the small radical element to jeopardize their interests.

## Fixing Trade Union Responsibility in England.

Two recent rulings by the House of Lords, sitting as a high court of appeal, have an important bearing on the responsibility of trade unions for injury inflicted upon individuals or corporations by those acting for them and in their interest. As these rulings establish precedents which cannot fail to have an important influence in determining the action of the courts in England and other countries when called upon to fix the responsibilities of trade unions to those injured by them, a brief review of the facts will be of interest.

The first of these decisions was that dismissing the appeal in what is known as the Taff Vale case. This was an action brought by the Taff Vale Railway against the Amalgamated Association of Railway Servants, and was the outgrowth of the adoption of what the company considered improper measures to enforce the acceptance of demands for which the union had ordered a strike. The litigation began on August 25, 1900, with the granting of an injunction against the Amalgamated Association, collectively, and certain of its members individually, restraining them "from watching and besetting the Great Western Railway Station at Cardiff, or the approaches thereto, or the works of the plaintiffs, or the residence of any workman employed by or proposing to work for the plaintiffs, for the purpose of persuading or otherwise preventing persons from working for the plaintiffs." It was contended that the association, not being an incorporated body, could not, as an association, be made subject to the jurisdiction of the court in the matter of a restraining order. This contention, which was made the basis of appeals from the court decisions adverse to the unions, has been brushed aside by the House of Lords. In dismissing the appeal the decisions of the courts below are affirmed, to the effect that a trade union is a body fully amenable to legal processes and under obligations to respect an injunction or a restraining order. What it also means has been told by counsel employed by the committee of the Trades Union Congress, who says:

"That the position of trade unions created by the judgment in the Taff Vale case is very serious; that the funds of unregistered unions will be as liable for dam-

ages as registered unions under the decisions given. It is advised that the various unions should amend their rules so as to prevent actions being taken against the unions in their collective capacity. Counsel advises that the trade unions should take up the first case where an injunction is sought to restrain persons from picketing (as this point has not been clearly defined), and that it should be taken up under the authority of the Trade Union Congress. In counsel's opinion a great advantage has been obtained under the judgment in giving power to trade unions to sue a vindictive employer who might try to break up or otherwise injure a trade union."

The second and more recent case is that of Leathem against Quinn, popularly known as the Belfast Butcher case. The facts in this case are, briefly, as follows: "Leathem had been for many years a butcher in Lisburn, Ireland, a small town near Belfast. One day he received notice from the representative of a trade union known as the Journeymen Butchers' Assistants' Association that he must dismiss his assistants because they had not become members of the association. Not deeming it proper to comply with this order, but wishing to keep on good terms with the union, Leathem attended one of its meetings and requested the election of his assitant to membership, offering to pay their dues and fines, if there were any. This proposition was agreed to on the condition that, as a measure of discipline, he would suspend certain of his helpers and let them walk the streets for a year. This he declined to do, being a humane man, not deeming it his duty to punish industrious and faithful subordinates for the gratification of the malice of the union membership. Then began a series of persecutions, ending in a boycott, which broke up his business and deprived him of his living. For this injury he brought suit against the union. The jury took a serious view of the matter and awarded him £200, with an additional £50 against four of the defendants engaged in the publication and distribution of a black list in which he was held up to public ridicule and contumely. This verdict was sustained by the Court of Appeals for Ireland, and is now affirmed by the Lords." In many respects it is more important than any decision hitherto rendered in connection with the rights, duties and responsibilities of trade unions. To put these voluntary associations in the position of individuals or corporations, amenable to the law and liable in damages for wrongs done by or in their name, to the extent of placing their funds in a position liable to attachment for the satisfaction of any judgments obtained against them, will materially change the viewpoint of the unions as to picketing, boycotting and breaking up the business of those who are so unfortunate as to incur their displeasure.

## The Vindication of Vandergrift.

The present crisis has splendidly vindicated the work which George G. McMurtry has done at Vandergrift, Pa., since the days when the Apollo strike first led him into it. Mr. McMurtry, now the president of the American Sheet Steel Company, undismayed by the experience at Pullman and at other places in this country, determined to establish an industrial town at Vandergrift, in connection with the great sheet mill built there by what was then the Apollo Iron & Steel Company. He determined that not alone should close and direct relations be established between the men and the management, based on mutual esteem and a reciprocal recognition of rights, but that the surroundings of the town be absolutely healthy and attractive in other respects. At the old plant at Apollo the Amalgamated Association had been completely defeated. At the new Vandergrift works a nonunion mill was established. The management strove for absolute fair dealing and for the principle of promoting individual men on their merits.

Mr. McMurtry studied industrial towns abroad, and, we understand, obtained many valuable hints at Essen. He was exceedingly careful, however, to eliminate even the slightest suspicion of paternalism. The model community which he has established has prospered exceedingly. It is composed almost entirely of native born Americans, 95 per cent. of the men having been taken from the adjoining farming section. It is not a surprise that Mr. McMurtry has been proud of his achievement, particularly since the enterprise as such has been quite remunerative. His creation of a model industrial town, peopled by men untrammeled by affiliations with labor unions, has, however, now brought to him the crowning vindication. His men have stood by him, and by the principle of frank and cordial relations between employer and employed. The men of Vandergrift have practically unanimously continued to work. The influence of the example in the valley of which it is the fairest gem has been such that it harbors a group of nonunion works which have proved of the greatest importance to the large organization, and have to some extent been the nursery of skilled men for other plants. With such a splendid proof of the value of an industrial town laid out on modern lines, and of a management fostering close relations with the men based on absolutely fair dealing, it is to be hoped that in the future Vandergrift will have the distinction of being only the oldest of a series of similar communities.

**The Steel Casting Consolidation.**—From good authority it has been announced that everything is now ready for the final organization of the steel casting consolidation, which will have a capital of $15,000,000 and will, in its continuation, embrace some of the leading steel industries of this country. Plans have been consummated, and Daniel Eagan, president of the American Steel Casting Company, who it is expected will form the basis for the consolidation and who has taken the leading part in the negotiations, will be president of the new steel casting trust. There is a slight diversion from the participants in the company, who were mentioned in *The Iron Age* last month. The companies to be merged are the American Steel Casting Company, the Seaboard Steel Casting Company, the Eureka Steel Casting Company, all of Chester, Pa. The stockholders of the Penn Steel Casting Company have refused to enter the consolidation at this time. The other works are the American Steel Foundry Company and the Scullin & Gallagher Company of St. Louis, the Sargent Company of Chicago, the Franklin Steel Casting Company of Franklin, Pa., the Pittsburgh Steel Casting Company, the Otis Steel Company of Cleveland, Ohio.

**The Bethlehem Steel Company.**—A flood of rumors has been launched in regard to the Bethlehem Steel Company and their relations to C. M. Schwab. One story is that the latter is to resign from the presidency of the United States Steel Corporation to take charge of the Bethlehem Steel Company. Another is that he has transferred his entire interest to J. P. Morgan & Co., who are to carry out the old Vickers-Maxim-Cramp project. We have it on the best of authority that there is no truth in these reports. In fact at a meeting of the Bethlehem Steel Company, to be held on Tuesday next, E. M. McIlvain, vice-president of the Bethlehem Steel Company, will be elected president of the company.

It is announced that proposals will be received until September 7 by the Bureau of Yards and Docks, Navy Department, Washington, D. C., for the construction of a sheet steel building 34 x 35 feet, at the League Island Navy Yard, Philadelphia, Pa.

## The Steel Strike.

PITTSBURGH, PA., August 21, 1901.—(*By Telegraph.*)—Developments of the strike in the past few days indicate that the Amalgamated Association realizes that it is engaged in a struggle for existence, and that organization is putting forth every effort in its power to cripple the United States Steel Corporation in the operation of their plants. Special efforts are being made to get the men out in the mills of the National Tube Company and the Riverside Works at Wheeling. The National Works at McKeesport are closed in all departments, while the Pennsylvania Tube Works on Second avenue, Pittsburgh, are badly crippled by a strike of 500 or 600 men belonging to the Federation of Labor. These, with the strike of some of the men in the mills of the Federal Steel Company, are the sum total of the gains made this week by the Amalgamated Association.

On the other hand the American Steel Hoop Company are fast getting all their mills in the Pittsburgh district in full operation. The Painter Works and also the Clark Mills are both running now to full capacity, while the Lindsay and McCutcheon mills in Allegheny are on to about half capacity.

Reports in the daily press of the closing of the Upper and lower Union mills and also the Duquesne Works of the Carnegie Steel Company by the strikers are untrue. It is a fact that some men have been discharged from these mills for joining the Amalgamated Association and that several times the two lower mills were crippled temporarily, but beyond this the strikers have not made any headway in the Carnegie mills. There has been no sign of trouble at the Edgar Thomson or Homestead works, nor is there likely to be.

In the sheet mills the situation is just about the same as a week ago. All the mills of the American Sheet Steel Company in the Kiskiminetas Valley are running to utmost capacity, and are turning out a larger output than ever before. There have been outbreaks several times at the Wellsville Works, but no serious damage has been done. The Wood Mill at McKeesport is still closed, and there are no signs that these works are to be removed to Vandergrift, as reported. An attempt was made to start the Cambridge plant at Cambridge, Ohio, but it was not successful, and it is possible that this plant may be removed to the Vandergrift district. It is the intention of the American Sheet Steel Company to concentrate their works in the Kiskiminetas Valley, as the concern have no trouble with the men in that district.

Beyond the starting up of the Crescent mills of the American Tin Plate Company at Cleveland, the situation in the tin mills is unchanged. The Star and Monongahela Works, in the Pittsburgh district, the Demmler at Demmler Station, and the Pennsylvania and Pittsburgh Works at New Kensington are idle and with no signs of being started. It is probable that an attempt will be made soon to start the Greer and Shenango Works at New Castle. These are the largest mills owned by the American Tin Plate Company, and the men who went out on strike are said to be very restless and anxious to get back to work.

While the strike looks more serious now than at any time since it started, there can be only one outcome to it, and that is the complete defeat of the Amalgamated Association. Of course, a compromise of the trouble is possible, but if this should come it will be on terms dictated by the United States Steel Corporation. An official of the Carnegie Steel Company is authority for the statement that no negotiations are on looking to a settlement of the strike.

### The Sheet Mills.

There are in operation now 66 sheet mills belonging to the American Sheet Steel Company, which includes six at Wellsville, 46 at Saltsburg, Apollo, Vandergrift, Hyde Park and Leechburg, and 14 at the Old Meadow and Scottdale plants. These are producing now more than one-half of the normal output of the whole capacity of the company. Hyde Park was started full at once with five mills on three eight-hour shifts. Within the next few days an additional number of sheet mills will be started.

The question of the removal of the Wood plant at McKeesport has been dealt with. We understand that plans are now being made for an eight-mill plant, to be driven by a high duty engine, for the new works. In dismantling some of the housings of the mills it was found that bed plates were broken and that generally the old machinery was in poor condition.

Very considerable improvements are under way at the Vandergrift plant of the American Sheet Steel Company. There is now in course of construction a new eight-mill plant, and this is to be followed later on by a second group of eight mills. The sheet bar mill, too, is to be increased in capacity.

### Joliet and Bay View.

The members of the Amalgamated Association at the Joliet and Milwaukee plants of the Illinois Steel Company went on a strike, after having previously voted to live up to their contracts. So far as the Bay View plant at Milwaukee is concerned this action was certainly a complete surprise.

A very important fact in connection with the situation at Joliet and Bay View is that the lodges of the Amalgamated Association signed the scales after the strike against some of the other constituent companies of the United States Steel Corporation had been begun, and did so with the approval of the national officers. The scale was signed by the Joliet lodges on August 5 and by the Bay View lodges on August 7.

### The Situation in Chicago.

CHICAGO, ILL., August 21, 1901.—(*By Telegraph.*)—All efforts to induce the employees of the South Chicago works of the Illinois Steel Company to strike have thus far been unsuccessful. Reports that a number of the men had quit work on the plea of sickness, but are really on strike are to-day declared to be untrue. The only striker at this time is District Vice-President Davis, who seems to have lost his influence at South Chicago.

A statement addressed to labor organizations and to the public, signed by 14 men who claim to represent the members of the Amalgamated Association employed in the steel works at South Chicago, has been issued.

The statement is an extended argument in justification of the refusal of the South Chicago men to violate their contract with the Illinois Steel Company, which specifically provides that the wage agreement can be broken under no circumstances except by either party to the agreement giving three months' notice of its intention, the notice to be given previous to October 1.

The statement quotes a decision rendered in 1897 by M. M. Garland, then president of the Amalgamated Association, disavowing the action of certain rail straighteners who sought to violate a similar contract with the Illinois Steel Company. It also quotes statements heretofore made by President T. J. Shaffer of the Amalgamated Association and John Mitchell, president of the United Mine Workers, upholding "the sacredness of labor contracts."

In conclusion the statement says:

"After taking legal advice we feel certain that President Shaffer's claim that our contracts are void because the Illinois Steel Company, with whom our agreement was made, has been absorbed by the United States Steel Company, is without foundation.

"The principles of union labor are as dear to us as to any men in the country who earn their living by honest toil, but we do not think we should be expected to violate every rule of business integrity and personal honor for a matter of sentiment, for this is a time when we must not let our sympathy get away with our better judgment.

"It may not be generally known, but the fact is we were supported by our district vice-president in our action in refusing to strike."

The Joliet and Milwaukee works are idle this week except the blast furnace, but it is believed that the conviction is gaining ground among those who voted to strike that they made a mistake, and an early disposition to return to work is looked for.

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It is reported from England that the steamship "Firth of Clyde," fitted with turbine engines, has been making an average speed of 20 knots an hour without pressure.

## Trade Publications.

List No. 21 has just been issued by Henry F. Hill of 38 Oliver street, Boston. This list enumerates and describes the second-hand machinery which is for sale and in stock at Mr. Hill's Boston warerooms. There are included several speed lathes, a wide variety of engine lathes, drill presses, three, four and six spindle drills, a 60-inch radial drill, milling machines of standard makes, a number of turret head and screw machines of well-known makes and numerous wood working and miscellaneous machines, including grinders, boring mills, centering machines, cutting off machines, punches, pumps, &c.

**The American All Wrought Steel Split Pulley.**—An attractive *brochure* has just been issued by the Niles Tool Works Company of 136 Liberty street, New York, descriptive of the all wrought steel split pulleys, for which this concern are selling agents. A complete line of these pulleys are kept in stock in New York. The pamphlet presents tables of sizes and styles kept in stock and gives the weights and prices of the various sizes. The subjects of interchangeable metal bushings to fit all sizes of shafting, self oiling boxes, self oiling pillow blocks, self oiling post hangers, pulley stands, collars, couplings, &c., are also dealt with in a similar manner.

**Blowers and Exhausters.**—The uses to which Buffalo volume blowers and exhausters are put are described in an interesting manner in a 20-page *brochure* which has been issued by the Buffalo Forge Company of Buffalo, N. Y. Illustrations as well as tables of dimensions and prices of the Buffalo "B" volume blowers and exhausters are presented. The illustrations show the various adaptations of these blowers, giving both the engine and motor electric connected types. A chapter also deals with blast gates, bearings and countershafts. The booklet has a neat and attractive appearance and contains much information for one who is looking into the matter dwelt on.

**Furnaces and Heating Machines.**—Catalogue C, a very handsome affair of 40 pages, 8 x 10¼ inches, has been issued by the Rockwell Engineering Company of 26 Cortlandt street, New York. The volume is profusely illustrated, the various styles of furnace work performed by this concern furnishing the subjects. The half-tone engravings used are well executed and neatly printed. Several new styles of furnaces are illustrated, the line embracing all types, from the smallest sizees of annealing and hardening furnaces using oil or gas for fuel to the great batteries of double end annealing and wire baking furnaces, such as are used in rolling mills. Pot annealing furnaces and crucible brass melting furnaces of special types also furnish the basis for illustration. New special machines are included in the form of revolving heating furnaces, copper wire brazing furnaces and fire plate cloth singeing machines. There is also a new style of enameling furnace for which either oil or gas is employed as fuel.

**Quick Service in Handling Materials.**—Under this heading a 20-page booklet has been prepared by the Yale & Towne Mfg. Company of 9, 11 and 13 Murray street, New York. The booklet illustrates and describes the Triplex Chain Blocks manufactured by this company. Prices for the several sizes and styles of these blocks are also given. In support of the efficiency of the Triplex Chain Blocks, it is stated that five 1½-ton blocks of this make in one of the largest works in the United States lifted 150,000 tons (240,000-foot tons each) in eight years, at a cost of 1-10 cent per foot ton, including labor, repairs and first cost of the chain blocks, and they are still doing good service. With 82 pounds pull on the chain one man can lift a ton 4 feet per minute.

**Wire Rope.**—A very handsome catalogue has been issued by the Hazard Mfg. Company of Wilkes-Barre, Pa., descriptive of their wire rope, embellished by a series of photographs of installations in which the rope has been employed. These include collieries, inclined planes, cranes, ore unloading machinery, schooners and ships, locking roads, &c. In another catalogue the new plant for the production of insulated wire is illustrated by a number of photographs showing the different departments.

**Disk Wheels.**—A neat little pamphlet has been issued by the Buffalo Forge Company, Buffalo, N. Y., illustrating their line of disk wheels of the pulley, steam and electric types. The wheels deliver air in a direct parallel to the axis of rotation, and are specially valuable for all situations in which this type of fan is adapted, notably for ventilating in residences, in malting houses, dye houses, paper mills, laundries, cooling towers, &c.

**Air Tools.**—Catalogue No. 2 has been issued by the Empire Engine & Motor Company, whose works are located at Orangeburg, N. Y., on the line of the West Shore Railroad. A full line of drills, reamers, chain hoists, crane motors, hoisting engines, pneumatic winches, pneumatic motors and center grinders are shown. The machine, as built, is compact, simple in construction, and when used in connection with drills and reamers all gears are incased and are run in oil. The company supply also motors to be operated by steam.

**Molding Machines.**—The Adams Company of Dubuque, Iowa, builders of foundry machinery, have issued an illustrated catalogue relating to their Farwell automatic molding machine. A series of photographs shows the position of the machine in different parts of the operation, and the catalogue deals also with points relating to patterns.

**Machine Screws.**—The Walker & Ehrman Mfg. Company, 127 and 129 West Washington street, Chicago, have issued a fine catalogue of standard size, which gives a description of their products. They manufacture a complete line of milled screws, studs, shoulder and collar screws, taper collar and shoulder pins, hanger screws, brass screws, &c. Tables are given showing the full range of sizes made and such details as threads to the inch and diameter. They also make cold punched nuts, machinists' hand taps, machine screw taps and pulley taps. They are further prepared to furnish turned metal parts of every description from steel, iron or brass. Several pages of the catalogue are used in presenting illustrations of fine work of this character. Views are also given of the company's machine shop, showing the array of automatic machines with which it is equipped.

**Smedley Steam Pumps.**—The Smedley Steam Pump Company, Dubuque, Iowa, have found it necessary to issue a supplement to their 1901 catalogue. This supplement presents illustrations of an improved boiler feed or high pressure pump, arranged for pumping hot or cold water under heavy pressure, wherever a body of water is to be elevated a great distance or forced at great velocity; double acting light service pump, giving large pumping capacity with the smallest possible expenditure of steam; brewery, distilling and packing house pump for pumping thick semiliquid substances; railway tank pump, designed to meet the demand for a strong, cheap, reliable and durable pump for water tank service; a special mining pump, which is furnished in a range of sizes extending from 50 gallons per minute to 800 gallons; a combined boiler and pump; a vertical steam pump engine for wells or mines; the Smedley patented dry vacuum air pump for use in laboratory work or other places where vacuum pressures are wanted; a low pressure pump for hospitals, hotels, &c., adapted for pumping water with a low pressure, such as is generated by low pressure house heating apparatus; an independent air pump and condenser for either stationary or marine engines; a duplex piston steam pump furnished in capacities from 30 to 1200 gallons per minute; the Smedley duplex low service pump in capacities from 280 to 3000 gallons per minute, and the Smedley compound duplex piston pump in capacities from 425,000 to 1,250,000 gallons per 24 hours. Sectional cuts are also given illustrating the construction of these pumps.

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Pitman & Brown of Salem, Mass., have been awarded the contract for building a large addition to the works of the Vaughn Machine Company, at Peabody. The addition will double the capacity of the plant.

## PERSONAL.

Charles T. Boynton has resigned as president of the Shelby Tube Company.

W. H. Vance, orginally of the Advance Emery Wheel Company, Detroit, Mich., and for some years past with the Sterling Emery Wheel Mfg. Company at Tiffin, Ohio, has been made superintendent of the factory of the Star Corundum Wheel Company, Detroit, Mich.

I. M. Reed, head draftsman of the Morgan Construction Company of Worcester, Mass., has accepted the position of superintendent of the I. Matheson & Co., Limited, Works at New Glasgow, Nova Scotia.

Edgar Piercy of Milwaukee, Wis., formerly superintendent of the Milwaukee Boiler Company, has assumed the superintendency of the Oswego Boiler Works, Oswego, N. Y.

Auguste Houyoux, the representative in Buenos Ayres of the Lyon house of Descours, Cabaud & Co., is now in this country to develop direct trade in iron and steel manufactures, copper tubes, sheets, &c.

Enoch James of Middlesborough, England, returned home last week.

There have just arrived on a visit to our steel plants and machine shops Prof. Richard Vater of the Technical College at Aix-la-Chapelle, and Max Wolf and Rudolph Wolf of the engineering and boiler works of R. Wolf, Magdeburg-Buckau.

Erskine Ramsey, chief engineer of the Tennessee Coal, Iron & Railroad Company, and Charles Bowron, assistant chief engineer, have resigned. H. Turner will succeed Mr. Ramsey and Mr. Bowron's position has been abolished.

George Westinghouse of Pittsburgh is expected back from Europe this week.

John Oursler of Youngstown, Ohio, has been appointed superintendent of the National Steel Company's furnaces at New Castle, Pa.

C. M. Hays, who has just resigned the presidency of the Southern Pacific Railroad, has been appointed director of the exposition at St. Louis.

Fred. L. Baker, president and general manager of the Baker Iron Works of Los Angeles, Cal., has started for the East. He proposes to stop at the Pan-American Exposition at Buffalo, also at Chicago and at Indianapolis, where he will visit the Atlas Engine Works, at Johnstown, calling on the Cambria Steel Company and at New York, visiting the Otis Elevator Company and Henry R. Worthington. He will also spend some time in Philadelphia in the interests of latest style and labor saving machinery and tools, incident to progressive and up to date foundry and machine shop business.

Julian Kennedy of Pittsburgh has recently visited, in the capacity of a consulting engineer, the Ensley steel plant of the Tennessee Coal, Iron & Railroad Company.

Emil Gerber, formerly with the Lassig plant at Chicago, has been appointed assistant to the president of the American Bridge Company, with headquarters at Pencoyd, Pa.

J. Armstrong Rawlins of Naylor & Co., New York, has returned from a brief trip to England.

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**Kidd Brothers & Burgher Steel Company.**—The Kidd Brothers & Burgher Steel Company of Pittsburgh have made application for a charter on Wednesday, August 21. The concern intend to build a 30-pot Iroquois melting furnace and will have a modern plant throughout. The site for the new works has not yet been selected, but it is possible it may be located at Parnassus, Pa. No contracts have yet been let, but these will be given out in a few days. The projectors of the new works are members of the Kidd Brothers & Burgher Steel Wire Company, with works at McKee's Rocks, Pittsburgh. The two concerns, however, will be entirely distinct.

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**Information Wanted.**—Who produces small hand machines for making bale ties ?

## MANUFACTURING.

### Iron and Steel.

The Alcania Company, Murtland Building, Pittsburgh, who have made application for a charter, do not intend to take up the making of new lines of product. The concern will continue to make tin plate at their present works, but will operate under a Pennsylvania charter, instead of a West Virginia charter as at present.

The puddling department of the Brown-Bonnell works of the Republic Iron & Steel Company, at Youngstown, Ohio, will be run triple turn, instead of double turn as at present. Eight double puddling furnaces will go on triple turn this week.

The employees of the Valley muck bar mill of the Republic Iron & Steel Company, at Sharon, Pa., have organized an Amalgamated lodge. A new lodge of finishers has also been organized among the employees of the Haselton mill of the same concern at Youngstown, Ohio.

The lease of the Minerva Furnace of the Minerva Pig Iron Company expired on July 1, and the company will probably dissolve in a few months.

The new Wharton Furnace at Port Oram, N. J., was blown in last week.

The Ohio Falls Iron Company, New Albany, Ind., will not remove their plant to Middlesborough, Ky., where they had been offered exceptional inducements, but will remain at their present location, the board of county commissioners having passed an order disannexing the plant from the city, thereby exempting the property from municipal taxation. The contemplated improvements to the plant will now be made, and it is not improbable that a sheet mill will be erected on the vacant ground just west of the present works. During the summer the plant was considerably improved and the capacity increased, and it is now running both night and day.

The Tyrone Iron Company, Harrisburg, Pa., have announced a general advance in wages to their men of 10 per cent., to take effect on September 1.

The Wallace Barnes Company, Bristol, Conn., manufacturers of small springs and dealers in wire and cold rolled steel, have just completed an addition, 110 x 36 feet, to their plant, which will double the capacity of the tempering department and enable them to make more prompt shipments. A quantity of new machinery has been installed and the plant otherwise improved. September 1 they will be in a better position than ever before to take care of their increasing trade.

The Dover Iron Company, manufacturers of cold blast charcoal pig iron, resumed operations at their Bear Spring Furnace, Bear Spring, Tenn., on the 12th inst., after having been out of blast during July for general repairs.

It is likely the blast furnace of the Sharon Steel Company, at Sharon, Pa., will be blown in this week. The whole plant of this concern, embracing blast furnace, open hearth steel works, rod, wire and nail mills, will be in full operation within a month. It is almost certain that the company will build another blast furnace and four more open hearth furnaces.

The Pope Tin Plate Company, recently organized at Pittsburgh, have decided to locate their works at Steubenville, Ohio. The supply of black plate will be obtained from the La Belle Steel Company, whose mills are at that place.

At the annual meeting of the Highlands Iron & Steel Company, Terre Haute, Ind., held last week, the following officers were elected: Philip Matter, president; John L. Smith, vice-president; William M. Meyers, secretary, and Walter C. Ely, treasurer and general manager. This concern are erecting a plant at Terre Haute for the manufacture of bar iron, heavy hoops and special shapes.

### General Machinery.

The Hydraulic Car Brake Company, 831 West Fayette street, Syracuse, N. Y., have incorporated with a capital stock of $25,000, to manufacture a power brake for street cars, which is operated by oil instead of air or steam. The company will not erect a plant for some time, the brakes for the present being made by contract. A. A. Schenck is secretary.

Mackintosh, Hemphill & Co., engine builders, of Pittsburgh have received a contract for the engine to drive the new mills of the Kokomo Steel & Wire Company, at Kokomo, Ind. The Garrett-Cromwell Engineering Company of Cleveland, Ohio, are doing the engineering work.

Irvan Van Wie, Syracuse, N. Y., manufacturer of centrifugal pumps, has broken ground for a two-story brick and wood addition, 40 x 60 feet, to be used as a machine shop. The new building, with the machinery to be installed, most of which has been purchased, will cost about $10,000. The extension will be completed early in September.

The Robinson Mfg. Company, Muncy, Pa., have incorporated with a capital stock of $50,000 for the manufacture of flour and feed mill machinery and machines for handling all kinds of cereals. A new plant will be erected, plans for which are not yet completed, which will give employment to about 150 mechanics. None of the equipment has been purchased, and

the company will shortly be in the market for new and good second-hand machinery for both the machine and wood shops. The officers are J. Hess Bailey, president; B. W. Harris, vice-president; H. C. Robinson, secretary and general manager, and George L. Painter, treasurer.

Edward J. Etting, Philadelphia and New York, reports the following recent sales of complete outfit for foundries: S. G. Barker & Son, Scranton, Pa.; Carbondale Metal Working Company, Carbondale, Pa., besides several export orders for Cuba, Manchuria and Mexico. Cupolas were sold to the Midvale Steel Company, Nicetown, Pa.; Norfolk & Western Railway Company, Roanoke, Va.; Philadelphia Hardware & Malleable Iron Works, Philadelphia, Pa.; Gruson Iron Works, Eddystone, Pa.; Rosmore Company, New York, N. Y.; Delaware & Hudson Company, Scranton, Pa.; Frederick Brass & Bronze Works, Pittston, Pa.; Pennington Foundry & Heater Company, Pennington, N. J.; Metal Furniture Company, and others. Molding machines were sold to the Baltimore & Ohio Railroad Company, Baltimore, Md.; A. B. Farquhar Company, Limited, York, Pa.; Safety Spindle & Mfg. Company, Danville, Pa.; McClave, Brooks & Co., Scranton, Pa.; Weatherly Foundry & Machine Company, and a number for export. Cranes were sold to the General Electric Company, New York, N. Y.; Westinghouse, Church, Kerr & Co., New York, N. Y.; New York Central Railroad, New York, N. Y.; Moore & White Company, Philadelphia, Pa.; Benj. Eastwood Company, and others, besides the usual line of orders for ladles, air hoists, sand sifters, pneumatic tools, magnetic separators, &c.

The J. A. Fay & Egan Co., Cincinnati, Ohio, are pushing the sales of their product in Mexico extensively at the present time. A contract has just been secured by them for the entire wood working machinery equipment of the new railway shop of the National Tehuantepec Railway, and they have also secured the contract for the equipment of a large sash, door and blind plant to be erected at Pueblo, Mexico.

The carpenter and machine shops of the Maine Central Railroad, at Brunswick, Maine, were last week burned with a loss of about $15,000. The tools were saved, but the heavy machinery was ruined.

The Ball Bearing Company of Boston, Mass., are now so rushed with orders that they have started to run a night force.

### Machine Tools.

The Draper Mfg. Company have been organized at Port Huron, Mich., to take over the business of T. Draper's Sons, manufacturers of valve facing tools. The capital stock of the company is $25,000. H. Corey of Petrolea, Ont., is president; A. D. Bennett, manager of the Commercial Bank of Port Huron, is vice-president; Jas. F. Draper is secretary and treasurer, and Thomas Draper is manager. The company have secured from the city of Port Huron a lease of the old Fort Gratiot Water Works Building and are remodeling the building to suit their requirements. They will manufacture on a more extensive scale the specialties of the old firm, comprising valve facing tools for all styles of valves, ball check valves, solid and hollow brass balls for all classes of work, valves for oil, salt and artesian wells, brass valve disks, &c. The company's products are fully set forth in a catalogue, which also contains testimonials from users of the Draper tools in all parts of the country.

### Engines and Boilers.

Robert Wetherill & Co. have completed the work of setting up the 1500 horse-power engine for the Chester Traction Company at their new addition to the power house. The same firm are having a new addition built to their machine shop, of which, when completed, the total dimensions will be 450 x 80 feet, two stories high. The American Bridge Company are furnishing and erecting the structural iron work.

### Foundries.

The Chicago Malleable Castings Company, whose plant was erected some two years ago at West Pullman, have improvements well under way which will increase the output of the plant 33 1-3 per cent. The company make a specialty of railroad and agricultural implement castings, and their business has so increased that they find it necessary to increase the facilities in all departments. Having a belt line connection with the Chicago Terminal Transfer Railroad Company, they are able to handle local as well as carload shipments with promptness, making connections with all the 27 different railroads of Chicago.

Malleable Iron Fittings Company, Branford, Conn., have just completed a new building, which they will use for japanning and coppering. This feature, in connection with their galvanizing and tinning business, enables them to supply gray and malleable iron castings, finished in either way. The upper floor of the new building, 283 x 58 feet, which was completed a few months ago, has been utilized as a machine shop and is running full time, with plenty of orders on hardware specialties and malleable iron fittings, both galvanized and black. W. T. Flanders, author of "Galvanizing and Tinning," published by the David Williams Company, has been engaged to take charge of the galvanizing and tinning department, and to superintend the erection of new galvanizing and tinning plants, which business will be made a special feature.

Owing to increase of business the Eagle Iron Foundry, Alonzo H. Smith, proprietor, Salem, Mass., are enlarging the foundry by an extension 44 feet in length, which will give much needed room for the employment of more molders and for the storage of patterns.

### Miscellaneous.

The Slowe Mfg. Company, 909 Walnut street, Philadelphia, Pa., have been recently incorporated with a capital of $2500, the officers being Charles P. Slowe, president; Richard J. Warrick, vice-president; Eugene T. Hinson, treasurer, and J. W. Harris, secretary. The general manager is C. P. Slowe. The company manufacture the Slowe hood and fume conveyor for kitchen and laboratory use. The company propose to build a plant in the near future, but at present the article is being manufactured on a commission basis.

No large improvements are contemplated at the Pittsburgh works of the American Locomotive Company, at Pittsburgh. Such changes as are being made are of a minor character.

The Cary Safe Company, Buffalo, N. Y., will build a substantial addition to their plant at Scott and Chicago streets.

The New Process Raw Hide Company, Syracuse, N. Y., report that they have been obliged to run their bevel gear planing machines nights during the last week in order to rush through a number of large bevel gear wheels to repair a break down for a big New England wire drawing concern. The bevels are of cast iron with teeth accurately planed to cone lines, and are to take the place of cast gearing.

The Crown Smelting Works of Chester, Pa., have closed down their iron foundry department and will hereafter devote their entire plant to the manufacture of brass and bronze work.

The Jamison Coal & Coke Company, Empire Building, Pittsburgh, have just completed the largest coal washer in the United States at their No. 2 Works, near Greensburg, Pa. This coal washer will have a capacity of 150 tons per hour, and cost about $75,000.

E. F. Reece, president of the E. F. Reece Company, Greenfield, Mass., manufacturers of fine screw cutting tools, has sold out his interest to Samuel Squires of Westfield. Edward Wilbur, treasurer, and E. J. Reece, superintendent, will continue in their respective capacities. It is the intention of the company to enlarge their plant, install new machinery, and otherwise increase their capacity. The company advise us that they are three months behind in their orders, but with increased facilities they hope to be in a position in the near future to keep up with their increasing trade.

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**The Buffalo Bolt Company.**—The report in the daily press that the plant of the Buffalo Bolt Company had been closed on account of scarcity of raw material is only partially true. Shortage of some sizes had a bearing as well as other reasons. Large consignments are now on the way and the plant will be running full in a few days.

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The Miami & Erie Canal Transportation Company of Cleveland, who propose to operate electrically propelled canal boats on the canal running from Toledo to Cincinnati, are securing figures on 60 steel canal boats 86 feet long, 16 feet beam and a carrying capacity of 100 tons each. It is believed that steel boats can be built about 35 per cent. cheaper than the wooden boats at present used. The company have commenced construction work and expect to have a section of the canal in operation within 60 days.

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The following Board of Directors has been chosen for the National Tube Company: F. J. Hearne, W. H. Latshaw, J. D. Culbertson, E. C. Converse, C. M. Schwab, E. H. Gary, William Nelson Cromwell, W. J. Curtis, Charles Steele, A. S. Matheson and William B. Schiller. The board organized by electing the following officers: President, F. J. Hearne; first vice-president, W. B. Schiller; second vice-president, W. H. Latshaw; third vice-president, J. D. Culbertson; fourth vice-president, A. S. Matheson; secretary and treasurer, J. D. Culbertson. The regular quarterly dividend of 1¾ per cent. on the preferred stock has been declared, payable October 1. Books close September 23 and reopen October 1.

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The members of the Blast Furnace Workers' Union in the Mahoning and Shenango valleys have been notified by the blast furnace owners that it will be impossible to bank the furnaces on Labor Day as the men had requested.

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S. Hamblin has sold his process for making steel to Lewis A. Leonard, Tribune Building, New York.

# The Iron and Metal Trades.

The strike situation has been complicated during the past week by the desertion of the Joliet and Milwaukee men, which cuts off a monthly production of 10,000 tons of Merchant Bars at Milwaukee and 30,000 tons of Steel products at Joliet. Through the closing down of the Joliet rod mills, the Wire trade is for the first time affected, at least locally. To both these Steel plants must be added three of the Steel works of the National Steel Company, the Bellaire, Mingo Junction and New Castle, and the Riverside and McKeesport Steel plants of the National Tube Company. Some of the blast furnaces have already been banked or blown out and others are likely to follow.

The heavy cutting down of the consumption of Pig Iron on the part of the works of the United States Steel Corporation of course tells adversely on the chances of sales on the part of the outside merchant furnaces of the Mahoning and Shenango valleys, and Bessemer Pig is weak as a consequence.

The Tube industry has been that most seriously affected by the latest developments, since now the works in the Pittsburgh and Wheeling districts, the most important of all, are idle. The Hoop and Bar mills have been gaining steadily in tonnage, and the same is true of the Sheet mills. There will be further accessions to active Sheet works during the next few days. So far as the Tin Plate industry is concerned, it is likely that the two large works in the Shenango Valley will be started in the near future.

Consumers are seriously embarrassed in the lines affected, notably in Tin Plate, Sheets, Bars and Tubes, and larger and larger premiums are being paid for prompt delivery. Since the South Chicago men remain loyal, the Steel Rail trade is unaffected. The same is true of Plates and Shapes, and, with the exception of Joliet, of Wire also.

The loss of revenue which the United States Steel Corporation suffer through the closing of some of their most profitable branches must be serious, and a considerable part of the business is gone past recovery. On the other hand, it will take many months to catch up with deliveries, and thus the mills, when once started again, will be busy far into the winter period when work is usually rather scarce. It is probable therefore that natural causes will tend toward a maintenance of values in the finished products in which the Steel Corporation have a commanding voice.

In Foundry Pig Iron Philadelphia and Buffalo note quite considerable sales to the Cast Iron Pipe interests, while Chicago reports good transactions and a livelier demand.

In the Metal trade Tin is being supported in the face of heavy arrivals and a virtual cessation of consumption for Tin Plate manufacture. In the Copper trade rumors of an international agreement are plentiful. Those in control of Lead cling to the price so long maintained, in spite of the obvious fact that it is unduly stimulating the production.

## A Comparison of Prices.

At date, one week, one month and one year previous.

**Advances Over the Previous Month in Heavy Type. Declines in Italics.**

| | Aug. 21, 1901. | Aug 14, 1901. | July 24, 1901. | Aug 22, 1900. |
|---|---|---|---|---|
| **PIG IRON:** | | | | |
| Foundry Pig, No. 2, Standard, Philadelphia | $14.75 | $14.75 | $14.75 | $16 00 |
| Foundry Pig, No. 2, Southern, Cincinnati | **13.00** | 13 00 | 12 75 | 13 75 |
| Foundry Pig, No. 2. Local, Chicago | 15.00 | 15 00 | 15.00 | 15.50 |
| Bessemer Pig, Pittsburgh | *15.75* | 15 75 | 16.00 | 15 00 |
| Gray Forge, Pittsburgh | **13.75** | 13.75 | 13.50 | 13 50 |
| Lake Superior Charcoal, Chicago | 17.00 | 17.00 | 17.00 | 20 00 |
| **BILLETS, RAILS, ETC.:** | | | | |
| Steel Billets, Pittsburgh (nom) | **24.50** | 24 00 | 24.00 | 18 00 |
| Steel Billets, Philadelphia (nom) | **27.50** | 26.20 | 26 20 | 20 00 |
| Steel Billets, Chicago, (nom) | ..... | ..... | . . | 20 00 |
| Wire Rods (delivered) | **36.50** | 36.00 | 35.50 | 35 00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 35 00 |
| Spikes, Tidewater | 1.80 | 1.80 | 1.80 | 1.80 |
| Splice Bars, Tidewater | 1.50 | 1.50 | 1.50 | 1.50 |
| **OLD MATERIAL, PER GROSS TON** | | | | |
| O. Steel Rails, Chicago | 13.00 | 13 00 | 13 00 | 9 50 |
| O. Steel Rails, Philadelphia | **16.25** | 16.00 | 16 00 | 13.00 |
| O. Iron Rails, Chicago | **20.50** | 20 00 | 18 50 | 12.50 |
| O. Iron Rails, Philadelphia | 19.00 | 19 00 | 19 00 | 14.00 |
| O. Car Wheels, Chicago | 16.50 | 16.50 | 16 50 | 15 00 |
| O. Car Wheels, Philadelphia | 16.50 | 16.50 | 17.50 | 17.00 |
| Heavy Steel Scrap, Chicago | *12.00* | 12.00 | 12.50 | 9.00 |
| **FINISHED IRON AND STEEL, PER POUND:** | | | | |
| Refined Iron Bars, Philadelphia | 1.55 | 1.55 | 1.55 | 1.30 |
| Common Iron Bars, Chicago | 1.55 | 1.55 | 1.60 | 1.35 |
| Common Iron Bars, Youngstown | **1.50** | 1.50 | 1.45 | 1.25 |
| Steel Bars, Tidewater | 1.60 | 1.60 | 1 60 | 1.20 |
| Steel Bars, Pittsburgh | **1.45** | 1.45 | 1.40 | 1.05 |
| Tank Plates, Tidewater | 1.75 | 1.75 | 1.75 | 1.30 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.05 |
| Beams, Tidewater | 1.75 | 1.75 | 1.75 | 1.65 |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.50 |
| Angles, Tidewater | 1.75 | 1.75 | 1.75 | 1.55 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.40 |
| Skelp, Grooved Iron, Pittsburgh | **2.05** | 2 05 | 1.80 | 1.50 |
| Skelp, Sheared Iron, Pittsburgh | **2.10** | 2.10 | 1.90 | 1.50 |
| Sheets, No. 27, Pittsburgh | **3.75** | 3 75 | 3.10 | 2.85 |
| Barb Wire, f.o.b. Pittsburgh | 2.90 | 2.90 | 2.90 | 2.80 |
| Wire Nails, f.o.b. Pittsburgh | 2.30 | 2.30 | 2.80 | 2.30 |
| Cut Nails, Mill | 2.00 | 2.00 | 2.00 | 1.95 |
| **METALS:** | | | | |
| Copper, New York | *16.50* | 16.50 | 16 87½ | 16 62½ |
| Spelter, St. Louis | 3.80 | ..... | 3.80 | 3.97½ |
| Lead, New York | 4.37½ | 4.37½ | 4.37½ | 4 25 |
| Lead, St. Louis | 4 25 | ..... | ..... | 4.20 |
| Tin, New York | *26.50* | 27.00 | 26.62½ | 30.25 |
| Antimony, Hallett, New York | *8 50* | 8 50 | 8.75 | 9.50 |
| Nickel, New York | 60.00 | 60.00 | 60.00 | 55.00 |
| Tin Plate, Domestic Bessemer, 100 lbs., New York | nom. | ..... | 4.19 | 4.84 |

## Chicago.

1205 Fisher Building, August 21, 1901 (*By Telegraph.*)

Much to the surprise and regret of the Iron trade here the union employees of the Illinois Steel Company at their Joliet and Milwaukee works last week reversed their former decision and struck. Every influence of local business interests was brought to bear to induce them to continue at work, but they decided to place themselves in line with their fellow members of the Amalgamated Association at other points. This cuts off a monthly production of approximately 10,000 tons of Merchant Bars at Milwaukee and 30,000 tons of Steel products at Joliet. The Joliet Works produce the Wire Rods on which the great wire mills of the American Steel & Wire Company at Joliet depend. These mills cannot be expected to continue in operation many days, as it will be impossible to secure a sufficient supply of Rods for them from other plants. The Wire mills of the same company at Waukegan and De Kalb are independent of the Joliet works and will not be affected by the stoppage there. The labor troubles continue in the local foundries operated by members of the National Founders' Association. Some additions have been made to the number of molders at work in these foundries, but they are running with only part of their full force.

**Pig Iron.**—The volume of business is showing a marked increase. It is true that the city foundrymen are

buying very little, but consumers in outside localities are not only taking Iron freely, but in notable instances are placing contracts for future delivery running into next year. Transactions of good sizze are reported in Gray Forge and Malleable Bessemer particularly, but some increased buying is observed in ordinary Foundry grades. It is estimated that the total business of the week was fully 20,000 tons. Inquiries are in hand for considerably more Iron, and a continuance of the improved demand is expected. Prices are held quite firmly, the local furnace companies having their product well sold for the remainder of the year and the Southern companies showing no disposition to make concessions. We quote as follows:

| | |
|---|---|
| Lake Superior Charcoal | $17.00 to $18.00 |
| Local Coke Foundry, No. 1 | 15.50 to 16.00 |
| Local Coke Foundry, No. 2 | 15.00 to 15.50 |
| Local Coke Foundry, No. 3 | 14.50 to 15.00 |
| Local Scotch, No. 1 | 15.75 to 16.25 |
| Ohio Strong Softeners, No. 1 | 16.00 to 16.50 |
| Southern Silvery, according to Silicon | 14.90 to 15.15 |
| Southern Coke, No. 1 | 14.90 to 15.15 |
| Southern Coke, No. 2 | 14.15 to 14.40 |
| Southern Coke, No. 3 | 13.65 to 13.90 |
| Southern Coke, No. 1 Soft | 14.65 to 14.90 |
| Southern Coke, No. 2 Soft | 14.15 to 14.40 |
| Foundry Forge | 13.15 to 13.40 |
| Southern Gray Forge | 12.90 to 13.15 |
| Southern Mottled | 12.90 to 13.15 |
| Southern Charcoal Softeners, according to Silicon | 15.00 to 16.50 |
| Tennessee Silicon Pig | 16.00 to 17.00 |
| Alabama and Georgia Car Wheel | 19.90 to 20.50 |
| Malleable Bessemer | 16.00 to 16.50 |
| Standard Bessemer | 17.50 to 18.00 |
| Jackson County and Kentucky Silvery, 8 per cent. Silicon | 15.75 to 16.25 |

**Bars.**—The strike at Milwaukee cuts off a large part of the supply of Merchant Bars on which the manufacturing consumers of this locality depend. This has come about quite unexpectedly and catches many consumers, who are obliged to enter the market and make fresh purchases to meet their requirements. Orders are being entered with independent mills, not only for early delivery, but for shipments beginning as remotely as next January. Consumers are disposed to protect themselves as much as possible, being uncertain how long the labor troubles may continue and how much prices may be advanced on this account. Contracts for future delivery are being made at 1.55c. to 1.60c. for Common Iron, but for early shipments buyers are paying premiums of $2 to $3 per ton. Soft Steel Bars are quoted at a minimum of 1.65c., Chicago, for future delivery, all orders being entered to be delivered at the convenience of the mills. It is more difficult to get Steel for early delivery than Iron, and buyers are paying 1.75c. to 1.80c. Jobbers are overwhelmed with the demand for shipment from stock. They are, of course, unable to accumulate any stock, and are constantly running short of sizes. They quote small lots at 1.90c. to 2c. for Iron or Steel, and 2.40c., base, for Hoops.

**Structural Material.**—An order for 1500 tons was the largest transaction reported during the week. Numerous small orders were received, and the aggregate ran up to a very respectable tonnage. Contracts for important buildings, to which reference has frequently been made, are held back for various reasons. Buildings now under construction are progressing slowly, as the mills are far behind on deliveries, although not one has been closed by the strike. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c.; 18 inches and over, 1.85c.; Angles, 1.75c. rates; Tees, 1.80c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.15c.

**Plates.**—Manufacturers are doing a satisfactory business, the sales balancing shipments and deliveries being promised in four or five weeks. The movement from jobbers' stocks is not quite so heavy as it has been. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c.; Marine, 1.95c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

**Sheets.**—Merchants having stocks of Light Sheets are enjoying an exceedingly active trade. Orders are being received from all parts of the United States. Jobbers in leading cities remote from Chicago are purchasing from our local merchants, who are limiting the quantity on single orders, as stocks are being depleted too rapidly. Prices are still advancing, 4c. being now the minimum for No. 27 Black, while Galvanized Sheets are to be had in only limited quantities at 65 off, with some sales reported as high as 60 off. The Tin Plate situation is worse than in Sheets. The cheapest full weight Terne Plates are held at $11.50 per box, and 90-lb. I. C., 14 x 20, Coke Plates are selling at $5.60. Stocks are reduced to almost nothing.

**Merchant Pipe.**—The strike in the Eastern Tube mills, which has cut off a large part of the supply, has scared buyers and the demand is consequently very heavy. The local supply is totally inadequate to meet the needs of the market and prices have advanced sharply. Former quotations have been withdrawn, and it is stated that sales can now be made at the full base price.

**Boiler Tubes.**—The situation in Boiler Tubes is closely related to that of Merchant Pipe. Local stocks are being heavily drawn upon because of the reduced output of the mills, and prices are being withdrawn.

**Rails and Track Supplies.**—Small orders are being received for Standard Section Rails, some of which are for delivery late this year, and others for next year. Good premiums have been offered manufacturers for Rails for summer delivery, but without avail. The South Chicago Works continue in operation, but every effort is being made by the Amalgamated officials to induce the men to strike. Prices are unchanged at $28 for Heavy Sections and $29 to $33 for Light Sections. Track Fastenings continue in excellent demand. Quotations are as follows: Splice Bars, 1.65c. to 1.75c.; Spikes, 2c. to 2.05c.; Track Bolts, with Hexagon Nuts, 2.90c. to 2.95c.; Square Nuts, 2.75c. to 2.80c.

**Merchant Steel.**—Quite a number of contracts have been entered during the week, and the general demand from manufacturing consumers has been quite brisk. Those who need material are not hesitating about covering requirements, but are buying freely at current quotations. Tire Steel is firmer. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 to 60 off. Ordinary grades of Crucible Tool Steel are quoted at 6¾c. for carloads and 7c. to 7½c. from store; Specials, 12c. upward.

**Old Material.**—Iron Rails are scarce, and although the demand is not large, it is strong enough to advance prices. Wrought Scrap of the best grades, Steel Scrap and Cast Scrap are neglected and prices are weak. A good demand is observed for Busheling Scrap, Turnings and Borings. The following are approximate quotations per gross ton:

| | |
|---|---|
| Old Iron Rails | $20.50 to $21.00 |
| Old Steel Rails, mixed lengths | 13.00 to 13.50 |
| Old Steel Rails, long lengths | 15.50 to 16.00 |
| Heavy Relaying Rails | 25.50 to 26.00 |
| Old Car Wheels | 16.50 to 17.00 |
| Heavy Melting Steel Scrap | 12.00 to 12.50 |
| Mixed Steel | 10.50 to 11.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.00 to $16.50 |
| Iron Car Axles | 19.50 to 20.00 |
| Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 14.50 to 15.00 |
| No. 2 Railroad Wrought | 13.00 to 13.50 |
| Shafting | 15.50 to 16.00 |
| No. 1 Dealers' Forge | 12.00 to 12.50 |
| No. 1 Busheling and Wrought Pipe | 10.50 to 11.00 |
| Iron Axle Turnings | 10.50 to 11.00 |
| Soft Steel Axle Turnings | 9.00 to 9.50 |
| Machine Shop Turnings | 10.00 to 10.50 |
| Cast Borings | 4.50 to 4.75 |
| Mixed Borings, &c | 4.50 to 5.00 |
| No. 1 Boilers, cut | 11.50 to 12.00 |
| No. 2 Boilers, cut | 9.50 to 10.00 |
| Heavy Cast Scrap | 10.50 to 11.00 |
| Stove Plate and Light Cast Scrap | 8.00 to 8.50 |
| Railroad Malleable | 11.50 to 12.00 |
| Agricultural Malleable | 10.50 to 11.00 |

**Metals.**—Copper is easier, carload lots of Lake being now quoted at 17c., and Casting brands, 16½c. Pig Lead is steady at 4.32½c. for Desilverized and 4.42½c. for Corroding in 50-ton lots. Dealers quote selling prices on small lots of Old Metals as follows: Copper Wire and Heavy, 15c. to 15¼c.; Copper Bottoms, 14c.; Pipe Lead, 4.15c.; Zinc, 2.75c.

**Coke.**—The demand is still light, owing to the con-

tinuance of the molders' strike. Prices are easy, concessions being made by some producers. Current quotations are $4.25 to $4.75 for 72-hour Foundry Coke.

## Philadelphia.

FORREST BUILDING, August 20, 1901.

Again we have to report a market which is in all respects a repetition of that of several weeks immediately preceding, the strike in the West having had little or no influence in this vicinity. Business conditions are about normal, except in Sheets and Tin Plates, which are practically all taken up for several weeks to come, although very stiff prices would be paid if anything like reasonable dates for deliveries could be guaranteed. This is exceptional, however, but it is not unlikely that there may be something of a squeeze in Billets, Structural Material and possibly in Bars and Plates if the strike continues beyond the present month. This is a matter beyond any one's foresight; it may end very suddenly, or it may continue indefinitely. The only sure thing is that the loss on both sides will be enormous, and to a great extent it will never be recovered. The feeling in trade circles here is that it is only a question of time when the men will give in, as the capital involved is too great and too strong to be successfully combated, apart from the fact that in this instance labor is not regarded as having a strong case. The course of business in the near future, however, depends so much upon the labor situation that it is quite impossible to make any very satisfactory forecasts in regard to it. The latest developments in a somewhat mild way are the decreased supplies of Billets and Steel Rails and a stiffening in Muck Bars and Merchant Iron. The movement is not very pronounced so far, but it is suggestive of what may happen if the strike continues or assumes a wider scope. Consumers are not anxious buyers beyond providing for requirements in the near future, but even this is becoming a little difficult, and of course will be more so the longer the suspension of work continues. On the other hand, if an early resumption is arranged for there may be a disposition to lay back for lower prices, but the exhaustion of stocks is so complete that it will be some time before normal conditions are restored. These and similar considerations, pro and con, restrain operations for late deliveries, so that nearly all the business done is of a hand to mouth character. This, however, is in satisfactory volume, and local conditions are probably somewhat more favorable than they would have been under ordinary circumstances. What may develop later is a question frequently asked, but which cannot be answered by any one at the present time.

**Pig Iron.**—Business in this department cannot be defined as either very good or very bad. The preponderance is probably on the good side, as the movement from furnaces is well up to production, prices are no lower, and stocks are practically no larger than they were a month ago. Buying is mostly in small lots and for early shipment, the exception being the demand from pipe founders, who have taken something like 10,000 to 20,000 tons during the past few days. Quite a good movement has also been in progress for Gray Forge for puddling purposes, stocks of this class of Iron being smaller today than they have been for a long time past. Foundry grades are also well taken, some of the furnaces being considerably behind in their deliveries, while there are none that have inconvenient surplus. The statistical situation is therefore very satisfactory, and the immediate outlook indicates a continuance of these conditions for some time to come. It would be superfluous to reiterate the peculiar influences which tend to repress speculative activity, but they are in active operation, and not likely to be removed until production and consumption resume their normal conditions. Sales have been at prices within the limits quoted herewith, according to quantity, quality, time and place for delivery, as follows for the city and nearby trade and 25c. to 50c. less at points within a radius of 100 miles South or West: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $15 to $15.25; No. 2 Plain, $14.25 to $14.75; Standard Gray Forge, $13.75 to $14; Ordinary Gray Forge, $13.50; Basic (Chilled), $14 to $14.25; Bessemer, $14.75 to $15.

**Billets.**—The offerings are extremely light, as makers are crowded with orders, and while the strike continues they are not disposed to make further commitments. Sales of small lots have been made at prices varying from $27.50 for Bessemer up to $30 for Basic Open Hearth, and these figures are probably as well as could be done to-day. No demand for long deliveries, so that there are neither bids nor offers at the present time, except for prompt shipments.

**Muck Bars.**—Good demand at $28 to $28.50, f.o.b. cars sellers' mills.

**Plates.**—There is plenty of business and mills are all well employed at the present time. Orders are not for unusually large lots, but there is a great deal of small business around, the aggregate result being a considerable tonnage entered during the week. Prices firm and unchanged—viz., for city and nearby deliveries: Plates, ¼-inch and thicker, 1.75c. to 1.80c.; Universals, 1.75c. to 1.80c.; Flange, 1.90c. to 2.10c.

**Structural Material.**—The demand keeps the mills busily employed, and although no very important orders have been placed, it is very difficult to get satisfactory deliveries, owing to the many back orders, which require attention. Prospects for full activity and firm prices during the remainder of the year are extremely satisfactory, as the work in sight is very large, and will require the full capacity of the mills to handle it. Prices remain as last quoted—viz., for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

**Bars.**—The demand is very active, and is likely to be still more so, if the strike in the Central West continues. All that need be said is that full employment is reported in all directions, and quoted rates are realized without any difficulty whatever. Prices unchanged, but firm as follows: 1.55c. to 1.65c.—viz., equivalent to 1.45c., f.o.b. Pittsburgh—for the best Refined Iron, and Steel at about the same figures, for carload lots and upward.

**Sheets.**—The scarcity of Sheets is greater than ever, so that no quotations can be given at which purchases could certainly be made. Manufacturers are doing the best they can to accommodate their trade, but they are practically snowed under. Nominally, quotations would be about as follows for best Sheets, but it is very uncertain if an order could be placed for any large quantity (Common Sheets two-tenths less): No. 10, 2.60c.; No. 14, 2.80c.; No. 16, 2.90c. to 3c.; Nos. 18-20, 3.50c.; Nos. 21-24, 3.60c.; Nos. 26, 27, 3.75c.; No. 28, 3.80c. to 4c.

**Old Material.**—There is a stronger tone to the market, and prices are developing an advancing tendency. Choice Melting Steel is said to have been sold at $17, and that or better is now a firm asking price. Several hundred tons of Shell and Gun Carriage Scrap sold at $14.75, and it is not easy to place orders unless at prices named by holders, who appear to have the market well in hand. Bids and offers are about as follows for deliveries in buyers' yards per ton of 2240 lbs.: Choice Railroad Scrap, $18.50 to $19; Country Scrap, $16 to $17; No. 2 Light Scrap, $13 to $13.50; Machinery Cast, $13.75 to $14.50; Heavy Steel Scrap, $16.50 to $17; Old Iron Rails, $19 to $20; Old Steel Rails, $16.25 to $16.75; Wrought Turnings, $11.50 to $12; Cast Borings, $7.25 to $7.50; Old Car Wheels, $16.50 to $17; Iron Axles, $23 to $23.50; Steel Axles, $17 to $18.

## Cleveland.

CLEVELAND, OHIO, August 20, 1901.

**Iron Ore.**—The demand for tonnage for the movement of Iron Ore down the lakes is failing rapidly, and many of the boats which have been constantly employed heretofore are looking for loads. The market, therefore, is very weak, but with hardly a possibility of a decline in freights. This is due to the attitude of the United States Steel Corporation's Ore interests toward the lake freights. For some reason or other it has been the policy of this company to maintain the freight rates at the present figure. Consequently when the business is on a decline, as it now is, the lake interests immediately bolster up the freights by chartering every vessel that is presented at the prevailing rates. The craft are not prom-

ised dispatch, but they get the loads at the prevailing rates. Such a course was pursued this week both out of Escanaba and Lake Superior ports, where there seemed to be a large overplus of tonnage for the amount of material to be moved. The movement down the lakes in consequence is very heavy, and the material is being unloaded as fast as the docks can move it. Every indication is that the shipment during the remainder of the year will represent the outside possibilities of the lower lake machinery. The rates have not changed in the slightest, and market quotations are as follows: Duluth and head of the lake ports, 80c.; Marquette, 70c.; Escanaba, 60c.

**Pig Iron.**—The demand for Pig Iron is increasing constantly, and, barring the prevailing labor trouble, the market is in splendid condition. Contracts have been closed recently on modest sized orders of Foundry Pig which demand deliveries within the next three months. The sales also for immediate delivery are heavy, and, while the furnaces are filled up with contracts and sales made previously for short time delivery, the purchasers at this time are demanding immediate delivery. This gives the furnaces all they care to do. The prices have stiffened a little, so that now $13.50 is the minimum quotation of No. 2 in the Valley, with some sales having been made at $14. The market seems to be represented by a quotation of about $13.75. No. 1 is quoted at from $14 to $14.50, at the furnace. No sales of Bessemer have been made lately. Present contracts run up into early September, but beyond that time the furnaces in the Bessemer Association have not much business in sight. Basic is being sold in occasional lots at $15, but the transactions are not heavy.

**Finished Material.**—The supply of Sheets and Bars is becoming scarcer as the strike continues, and some sizes are very hard to obtain. In the lighter Sheets there is a certain mill capacity still employed, which affords a little better supply of material than is noted in the other sizes, particularly No. 14 and heavier. The sales which have been made since the opening of the strike have included more than the mills are now producing, and have about eaten up the stock in addition. The outlook, therefore, for deliveries of any large quantities of any size is not bright, but if anything the heavier grades are more scarce than the lighter Sheets. There is hardly a change in the prices, because those who have material are not anxious to make quotations. Nominally, however, it might be said that out of stock the old prices prevail of 3.95c. for No. 28, one pass cold roll, and 2.50c. for No. 10 blue annealed. Bars are on the upward grade. Steel Bars have been sold this week at 1.50c., at the mill, and Iron Bars at 1.52½c. to 1.55c., at the mill, with quotations out of stock ranging from 1.70c. to 1.75c. The idleness of the Hoop Company is preventing the production of quite a large tonnage, which has been sold through this territory, hence the demand is in excess of the supply. The sales of Billets and Sheet Bars this week have been very heavy at the prices recently established—$25 for Sheet Bars and $24 for Billets. The market seems to show an increase of interest in this product. H. Silberman & Co. and H. K. Jackson of Cleveland have purchased the old plant of the Whitely Reaper & Mower Works at Springfield, and intend to produce Iron Bars and Iron Sheets from Scrap, and also to roll Steel Sheets from Billets. This week ordering on old contracts has been very heavy, especially in Structural Material. The recent new sales and the heavy ordering on former contracts keep the mills running at full capacity. Plates are also in demand, both for ship and car work. The prices remain at 1.70c. for Plates and Structural Material.

**Old Iron.**—The Scrap trade this week has shown no change from former conditions, the sales being moderate, with most of the interest in business in prospect. The prices quoted are as follows: No. 1 Wrought, $15 net; Steel Rails, $15 gross; heavy Steel, $15 gross; Cast Borings, $6 net; Wrought Turnings, $10 net.

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The Cleveland Iron & Metal Company announce that J. Bialosky has bought of M. Cohen and Jos. Nagusky their entire interests in the Cleveland Iron & Metal Company on August 9, 1901. M. Cohen and Jos. Nagusky hereafter will not be connected with the company. The business will be conducted in the future, the same as in the past, under the old name—viz., Cleveland Iron & Metal Company, dealers in Iron and Steel Scrap.

## Cincinnati.

FIFTH AND MAIN STS., August 21, 1901.—(*By Telegraph.*).

The conditions in the Pig Iron market have not changed materially during the past week. Labor troubles and the usual midsummer feeling are credited with keeping trade down to the actual necessities. In this immediate territory the tonnage booked is light, though there has been some fair business reported here from a distance. In regard to prices, there are the usual conflicting statements; some furnaces are evidently holding to the agreement figures and others are shading these 25c. or even more. The outlook is for a continuation of the present conditions. Freight from Birmingham is $2.75 to this point; from Hanging Rock district, $1. We quote, f.o.b. Cincinnati:

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| Southern Coke, No. 1 | $13.50 to $13.75 |
| Southern Coke, No. 2 | 13.00 to 13.25 |
| Southern Coke, No. 3 | 12.50 to 12.75 |
| Southern Coke, No. 4 | 12.00 to 12.25 |
| Southern Coke, No. 1 Soft | 13.50 to 13.75 |
| Southern Coke, No 2 Soft | 13.00 to 13.25 |
| Southern Coke, Gray Forge | 12.00 to 12.25 |
| Southern Coke, Mottled | 12.00 to 12.25 |
| Ohio Silvery, No. 1 | 15.50 to 16.00 |
| Ohio Silvery, No. 2 | 14.50 to 15.00 |
| Lake Superior Coke, No. 1 | 14.50 to 15.00 |
| Lake Superior Coke, No. 2 | 14.00 to 14.50 |
| Lake Superior Coke, No. 3 | 13.50 to 14.00 |
| Southern Basic | 13.75 to 14.00 |

*Car Wheel and Malleable Irons.*

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|---|---|
| Standard Southern Car Wheel, chilling grades | $18.25 to $18.75 |
| Standard Southern Car Wheel, No. 2 | 17.25 to 17.75 |
| Lake Superior Car Wheel and Malleable | 18.50 to 19.00 |

**Plates and Bars.**—The conditions are unchanged; market strong and fairly active. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.60c., with half extras; same in small lots, 1.80c., with full extras; Steel Bars, in carload lots, 1.55c., with half extras; Base Angles, in carload lots, 1.80c.; Plates, ¼ inch and heavier, 1.90c. to 2c.; 3-16 inch, 2.10c.; Sheets, No. 16, 2.90c. to 3c.

**Old Material.**—There is no change to note; trade is rather quiet. We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, per net ton, $13.50 to $14; Cast Railroad and Machine Scrap, $12.25 to $12.75; Iron Axles, $19 to $20; Iron Rails, $17.25 to $18.25; Steel Rails, rolling mill lengths, $14.75 to $15.25; short lengths, $13.75 to $14; Car Wheels, $15.75. All prices except No. 1 Wrought on the basis of gross tons.

## St. Louis.

CHEMICAL BUILDING, August 21, 1901.—(*By Telegraph.*)

**Pig Iron.**—The market has been very quiet for the past week and the few sales made were usually carload lots for immediate delivery. Inquiries are not plentiful, and selling agents are anticipating a rather dull period for the next few weeks, if not longer. Some scarcity of No. 1 Foundry in the Birmingham district is noticeable, but the scarcity is not of sufficient importance to have any effect on the price. The general tone of the market is a trifle uncertain, but should the present dullness become pronounced prices will ease off in consequence. We quote as follows, for cash, f.o.b. cars St. Louis:

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|---|---|
| Southern, No. 1 Foundry | $14.25 to $14.50 |
| Southern, No. 2 Foundry | 13.50 to 13.75 |
| Southern, No. 3 Foundry | 13.00 to 13.25 |
| Southern, No. 4 Foundry | 12.50 to 12.75 |
| No. 1 Soft | 14.00 to 14.25 |
| No. 2 Soft | 13.50 to 13.75 |
| Gray Forge | 12.50 to 12.75 |

**Bar Iron.**—The demand for Bars is extremely heavy and prompt shipment is an important part of nearly every order. Prices are firmly maintained and advances of from $1 to $2 per ton are readily obtainable if prompt shipment is guaranteed. Mills quote Iron Bars at 1.60c. to 1.65c., and Steel Bars at 1.65c. to 1.70c. Jobbers quote Iron Bars, 1.90c. to 2c.; Steel, 2.05c. to 2.15c., full extras.

**Rail and Track Supplies.**—The demand for Light Sections of Rails is very strong and difficulty is being experienced in getting anything like prompt delivery. There is a steady increase in track building and repairing from the lumber section of the South and Southwest, which gives promise of continuing for the balance of the year. Track Supplies are also very active and are quoted as follows: Splice Bars, 1.75c. to 1.85c.; Bolts, with Square Nuts, 2.65c. to 2.75c.; with Hexagon Nuts, 2.85c. to 2.95c.; Spikes, 1.95c. to 2c.

**Pig Lead.**—The market is quiet and prices show but little change. Soft Missouri is quoted at 4.25c. to 4.27½c.; Chemical is quoted at 4.30c. to 4.35c., but prices appear a trifle too high to induce buying.

**Spelter.**—The market remains unchanged with 3.80c. the asking price. Nothing more is heard of the Spelter combination, and it is presumed it is off again for a period at least.

## Pittsburgh.

HAMILTON BUILDING, August 21, 1901.—(*By Telegraph.*)

**Pig Iron.**—There is not enough Iron being sold to fix prices and the tone of the market is very weak. The United States Steel Corporation will not likely need any Iron for September, and some of the Valley furnaces will either have to bank until the strike is over or else pile their Iron. It is probable that stocks this month will show an increase. The nominal price of Bessemer Iron is $15.25, at furnace, but this could be shaded on a firm offer; in fact small lots of Iron have been offering right along at $15, Valley, or less. Gray Forge is in fair demand at about $13, at furnace, or $13.75, Pittsburgh. Standard No. 2 Foundry Iron has been offered at $14, Pittsburgh, and declined. On firm offer it could likely be bought at $13.75. We quote: Bessemer, $15 to $15.25, Valley, or $15.75 to $16, Pittsburgh; Gray Forge, $13, at furnace, or $13.75, Pittsburgh; No. 2 Foundry, $13.75 to $14, Pittsburgh.

**Billets.**—The Steel market is active, there being a good deal of inquiry for prompt shipment. Billets for shipment in August and September have sold in small lots as high as $24.50, at maker's mill, and it is probable that $25 could be obtained. The Steel output is materially cut down by the closing of the New Castle, Bellaire and Mingo Junction works of the National Steel Company. Basic Billets are bringing from $25 to $26, at mill.

**Muck Bar.**—The market is firm at $30.50 to $31, f.o.b. cars Pittsburgh, for standard grades.

(*By Mail.*)

Developments of the past few days have not been favorable for an early settlement of the strike, but, on the contrary, it has been spreading, and the American Federation of Labor has called out the men in a number of plants in which no trouble was expected. There is no doubt but that the Amalgamated Association is making the fight of its life, knowing that the very existence of the organization depends on the result of the present struggle. The actual conditions existing in the strike are fully given elsewhere in this issue. There is something of a panic among buyers in regard to supplies of Finished Iron and Steel, with the result that there is a very heavy buying movement, and prices on nearly all kinds of Finished Material, except that governed by Price Agreements, have sharply advanced. On Sheets, Hoops and Cotton Ties, Skelp, Tubing and Tin Plate prices are going up nearly every day, and for prompt delivery sellers can command almost any figure they ask. The present heavy demand for Iron and Steel is taken as an indication that trade for the balance of this year is going to be very active and that there will be plenty of work for all the mills, including those that are now idle. This summer in the Iron trade has been a remarkable one in the fact that the usual midsummer dullness was entirely absent, active buying continuing right through July and August, which are usually dull months. The country is consuming Iron at an enormous rate, and there is no doubt but that material, which is being bought in such large quantities, is going into actual consumption. The Pig Iron market is very dull, and the tone of the market is weak. There is no doubt but that Iron could be bought at much lower figures than were paid a couple of weeks ago. There has been very little Bessemer Iron sold by the furnaces for September and later, and if the strike should last for two or three weeks longer some of the furnaces will have to bank down. The National Steel Company have already reduced their output of Pig Iron a good deal by banking down four or five of their furnaces. The Steel market is very active and prompt Steel has sold as high as $25 at mill. Some of the consumers are in distress for Steel, and have been compelled to close down two or three days at a time, waiting for Steel to accumulate. Prices are likely to be still higher if the strike lasts. The concerns that signed the Amalgamated scale and are therefore not affected by the strike are coining money, being able to get high prices for their products. The leading mills are sold up for several months ahead and at prices that allow a very heavy profit. Many concerns are likely to make as much money this year as they did in 1899, although the average of prices may not be as high as in that year.

**Ferromanganese.**—Prices of Ferro seem to be somewhat demoralized, and Foreign is being offered in this market at about $52.50, f.o.b. cars, buyer's mill, in large lots. Domestic is held at about $55, but there is very little doing.

**Sheets.**—The market is very active, and now that it looks as though the strike might last for some time buyers are more anxious than ever about deliveries, and Sheets for shipment in this and next month are commanding very high prices. For shipment within 30 days Black Sheets, No. 27 gauge, have sold at 3.75c. and even higher, while No. 28 have sold at 4c. These prices, however, are for early shipment only, as buyers can place orders at much lower figures where they are willing to take chances on delivery. For shipment in last two or three months of the year No. 27 Black Sheets, One Pass, can be quoted at 3.25c., maker's mill, and No. 28 at 3.55c. Some mills, however, are quoting higher prices than these. Several new independent Sheet mills will start up in September, but these are sold up for two or three months or longer. Galvanized Sheets are scarcer than Black and can hardly be had at any price for prompt delivery. We quote Galvanized at 70 and 5 to 70 off, for prompt shipment. For delivery over balance of the year 70 and 10 in carloads, maker's mill, is being quoted.

**Bars.**—There is a heavy demand for Bars, especially for prompt shipment, and where a mill is able to ship out in a week or two from $2 to $3 a ton can be secured over regular prices. Some fair sized contracts from Implement makers have been placed recently, and some of the mills are so well sold up that they are not in position to make deliveries inside of five or six weeks. The Republic Iron & Steel Company have started up one or two more mills, and this concern are turning out every pound of stuff they possibly can. There has been no change in the association price of Steel Bars, which remains at 1.40c. at mill, half extras. On Open Hearth Steel Bars $2 a ton extra is charged, and also extra for High Carbons. Steel Bars for prompt shipment are bringing from 1.45c. to 1.50c. at mill. Iron Bars are about as scarce as Steel, and we quote Common Iron Bars at 1.45c. to 1.50c. at Valley mill. Refined Iron Bars are from $1 to $2 a ton higher.

**Plates.**—Orders for Plates being placed with the mills are mostly for small lots, but aggregate a large tonnage. The Pressed Steel Car Company are taking about 1200 tons of Plates and Shapes a day from the Carnegie Steel Company. Several small Government jobs have recently been placed. Prices as fixed by the Plate Association are said to be firmly held. An advance in price of Plates on account of the general advancing tendency of the market would not be a surprise. We quote: Tank quality, ¼-inch and heavier, 1.60c.; 3-16-inch, 1.70c.; under 3-16-inch and above No. 10, 1.75c.; Flange or Boiler Steel, 0.1c. advance over the base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel,

0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

**Steel Rails.**—It is claimed that orders for about 125,000 tons of Rails for 1902 delivery have been placed at the full price of $28 at mill. The shut down of the Rail mills of the Federal Steel Company by the strikers will further complicate the situation as regards deliveries. We quote Rails, Standard Sections, at $28 at mill.

**Structural Material.**—The American Bridge Company have recently taken some large contracts, aggregating some 15,000 to 20,000 tons. This concern have also taken some foreign work. A good many small orders are being placed, and the Structural mills will have all they can do for balance of this year. On a few Beams for spot shipment an advance over regular prices is charged. The market is firm and we quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.40c. to 1.45c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

**Merchant Steel.**—Buyers who placed orders for two or three months ago have again come in the market for more supplies, and a good deal of tonnage is being placed. Prices are firm, and in some cases higher figures are being quoted for early delivery. We quote: Tire Steel, 1.60c. to 1.70c.; Toe Calk, 1.85c. to 2c.; Open Hearth Spring, 2c. to 2.10c.; Plow Slabs, 2c. to 2.10c.; Cold Rolled Shafting, 55 per cent. off in carloads, 50 per cent. in less than carloads; Sleigh Shoe Steel, 1.65c. to 1.75c.; Tool Steel, 7c. per lb. and upward, according to quality. On Tool Steel the mills allow freight east of the Mississippi River. A few mills quote Tool Steel as low as 6c., but do not allow freight.

**Skelp.**—The situation as regards deliveries of Skelp is worse, and the leading Tube interest has had several sources of supply cut off in the past week. One or two mills that signed the scale, but were giving their output to this concern, are closed, the men having gone on strike. Prices of Skelp depend largely on deliveries wanted by the buyer. For delivery within 30 days we quote Skelp as follows: Grooved Iron Skelp, 2.05c. to 2.10c., and Sheared, 2.10c. to 2.15c. Grooved Steel Skelp is about 1.90c. to 2c, and Sheared 2c. to 2.05c. We note a sale of Sheared Steel Skelp at 2.05c., Pittsburgh. For delivery over balance of the year lower prices would be made.

**Tubular Goods.**—The sharp advances in prices of Skelp, together with the shut down of more Tube mills by the strike, has made Pipe for prompt shipment very scarce, and jobbers and small mills that can ship out promptly can usually get an advance over regular prices. The smaller sizes of Pipe, running from ⅛ to ½ inch, can hardly be had at any price. In New York City jobbers have held a meeting and have advanced prices of Pipe about 20 per cent. This action will likely be followed by other cities. There is a heavy demand, and the leading interest have recently booked some large orders, some of which were for export. Several new Tube mills now building will be in the market before long. The following prices to consumers in carloads are being rigidly held, and often higher prices are obtained. To consumers in carloads discounts are as follows:

*Merchant Pipe.*

| | Per cent. Black. | Per cent. Galvd. |
|---|---|---|
| ⅛ to ⅜ inch and 11 to 12 inch | 61 | 48 |
| ¼ to 10 inch | 68½ | 56 |

*Casing, Random Lengths.*

| | S. & S. | I. J. |
|---|---|---|
| 2 to 3 inch | 58 | 53½ |
| 3½ to 4 inch | 63 | 59 |
| 4½ to 12½ inch | 65 | 61½ |

*Casing, Cut Lengths.*

| | S. & S. | I. J. |
|---|---|---|
| 2 to 3 inch | 53½ | 59 |
| 3½ to 4 inch | 59 | 55 |
| 4½ to 12½ inch | 61½ | 57½ |

*Boiler Tubes.* Up to 22 feet.

| Steel. | Per cent. |
|---|---|
| 1 inch to 1⅜ inch and 2¾ inch to 5 inch, inclusive | 65½ |
| 2 inch to 2½ inch, inclusive | 60 |
| 6 inch and larger | 59 |
| Iron. | |
| 1 inch to 1¼ inch and 2½ inch | 43½ |
| 1¾ inch to 2¼ inch | 43 |
| 2¾ inch to 13 inch | 53 |

Prices made by the mills to jobbers are from 5 to 10 per cent. lower than the above.

**Coke.**—As yet it has not been necessary to blow out ovens on account of the strike, but if it should last the output of Coke will have to be cut down. Last week the Connellsville region turned out 238,291 tons, a slight gain over the previous week. There is very little buying of Coke, consumers being covered by contracts. As noted last week, some brands of non-Connellsville Furnace Coke have been sold as low as $1.30 to $1.40 a ton, for prompt shipment. We quote strictly Connellsville Furnace Coke at $1.75 to $2 a ton, and 72-hour Foundry at $2.25 to $2.50 a ton. We quote Main Line Furnace Coke $1.50 to $1.60, and Foundry at $1.75 to $2 a ton.

**Iron and Steel Scrap.**—There is a good deal of buying, both by the Open Hearth Steel works and also by the Republic Iron & Steel Company. Sales of 3000 to 4000 tons of Old Steel Rails for remelting are reported at about $15, Pittsburgh. We quote No. 1 Railroad Wrought Scrap at $15; Old Iron Rails, $18.50 to $19; Cast Scrap, $11 to $12; Old Steel Rails, $15 to $15.50.

## Birmingham.

BIRMINGHAM, ALA., August 19, 1901.

The market for Iron the first half of the past week was rather a listless one and sales were rather light. But there was an improved demand the latter part of the week, and there was undoubtedly a firmer tone to the market. But the demand was not sufficient in volume to create an active market. Buyers were not taking everything that was offered, but were seemingly confining themselves to present necessities. The result was a fair trade, but not equal to the furnace output for the week. All the grades are not in fair supply by all the furnaces, and one might say that stocks were ragged. Prices were more uniform, and little if any disposition was manifested to make any concessions. No. 2 Foundry Iron was well maintained at $10.50, while that price was declined for a lot of several tons by one interest. But those figures fairly represent the market. Some No. 4 Foundry sold at $9.50, while that price was also refused for one lot. Gray Forge ruled around $9.25, with those figures the prevailing market. Some Basic Iron changed hands at $11 for delivery last quarter, and for that grade there was a fair inquiry. No. 3 Foundry was around $10. Some interests are disposed to regard the improvement with an optimistic eye and as the forerunner of better things, and feel that the buyers will come to them if they only hold firm. Regarding the strike movement as practically whipped, they think that the main obstacle to a better market will soon be removed. The export trade is being encouraged, and at least one good order was booked, report says, for Italy. There are at this writing other negotiations in progress that will probably be successfully concluded. Freight room is being offered rather freely and rates are reasonable. The trade once started again will give an impetus to the market that will in a short time practically clean up the furnace yards. The shipments of Iron from the Birmingham district for July amounted to 57,245 tons. The total shipments of Alabama and Tennessee exceed by 44,000 tons those of July last year. The increase of this district was 19,000 tons. The exports for July were only 152 tons, showing how dead this trade has been. The shipments of Cast Iron Pipe were 7500 tons, a large increase over July of last year.

Concerning the consolidation of furnace interests in East Alabama, gossip is quiet this week. There is no doubt that the subject was broached, but it has not yet resulted in anything definite.

It is announced in the public press of Talladega on reliable authority that the furnace company there will build an Open Hearth Steel plant and add at least another furnace to the one now in blast. It is given out that they will be closely allied to the shipbuilding plant to be built near Mobile. The assertion is very positive, but nothing is known of it here. The Republic Iron & Steel Company have negotiated for the erection of a new stock house at Thomas at a cost of $60,000. The dimensions are to be 639 x 91 feet. The bins for the Ore and

limestone are to be 244 in number, built of wood and lined with heavy Sheet Steel. They have just concluded the erection of four large furnace stoves, and will soon have their large furnace in operation.

Public reports have been spread to the effect that the city of Atlanta had rejected the Pipe tendered by the Dimmick Pipe Company here on contract. It was simply "a tempest in a teapot." A few of the Pipe failed to stand the required test, as will occur in all large contracts. But the company have righted matters and consented for an inspector to be constantly at their works until the completion of the contract. Such accidents are a part of the business and cannot be avoided.

There is considerable prospecting going on in the Brown Ore fields and several properties have of late changed hands. Some of the best fields have been well worked out and desirable properties of Brown Ore lands are in request. With the completion of projected railroads in East Alabama virgin fields of this Ore will have an outlet and find a ready market.

## New York.

NEW YORK, August 21, 1901.

**Pig Iron.**—Aside from a good sized inquiry from the pump makers, little is doing in this district, and the market remains quiet. Southern furnaces are holding well at prices equivalent to $10.50 for No. 2 Birmingham. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Gray Forge, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25; Gray Forge, $12.75 to $13.

**Steel Rails.**—Some sales are reported of Rails for the Mexican market, the aggregate being about 125,000 tons. We quote $28 for Standard Sections, $33 to $33.50 for Girder Rails, and $22 to $23 for Relayers. We quote Spikes, 1.80c. to 1.85c.; Splice Bars, 1.50c. to 1.60c.; Hexagon Track Bolts, 2.65c. to 2.70c., at mill.

**Finished Iron and Steel.**—There have not been any transactions of special note during the week under review. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.80c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.58c. to 1.60c.; Soft Steel Bars, 1.62½c. to 1.65c.

## Metal Market.

NEW YORK, August 21, 1901.

**Pig Tin.**—The market during the week was quiet, with prices sagging. Spot to-day closed 26.50c., which is from ½c. to ¾c. lower than last week's quotations. Exsteamer landing was sold at 26.40c., August, 26.30c. and September, 25.50c. bid and 26c. asked. The London market closed to-day £115 15s. for spot and £110 17s. 6d. for futures. The half-monthly shipments from the Straits were 2070 tons, as against 1680 tons for the same period of last year. The metal continues to arrive more freely, there having been landed so far this week 910 tons. This brings the total for the month to 1795 tons. A good portion of the new arrivals, it is said, go to a speculative concern, and it is supposed will be stored. The trade is at a loss to comprehend the object of such proceedings in the face of heavy discounts on future deliveries, and also in spite of the present condition of trade through the steel strike. It is also considered that through increased production everywhere the position of the article as to the future is by no means promising.

**Copper.**—The situation is unchanged. Business is dull, and prices remain nominal at 16.50c. for Lake and 16¾c. for Electrolytic and Casting. Outside brands of Casting are offered, however, at 15¾c. to 16c., according to quality. The London market after a little spurt has again grown weak and closed to-day at £66 5s. for spot and £66 12s. for futures. Best Selected has advanced 5 shillings to £73. The position of the article is not considered a healthy one, when with a monthly production of 22,000 tons we have ceased to export our surplus. So far this month the exports were not more than the imports, about 3600 tons having arrived and a like quantity being shipped. During the previous seven months of this year our net exports—that is, deducting the figures of imports—amounted to only about 30,000 tons. That there is an accumulation of stocks on a very large scale is not questioned, and it is predicted in the trade that this will continue as long as prices here are maintained on a level so much higher than the European value. Production in this country so far this year has not increased, but everywhere else in the world is increasing. European producers, as far as their report for this month shows, have increased their output very materially. The report for the month of July shows a production of 9254 tons, as against 7433 tons of last year. Many unverified reports are current as to an understanding among the leading producers of the world.

**Pig Lead.**—There is no change in this market and a quiet, steady business is being transacted. The American Smelting & Refining Company continue to quote on a basis of 4.37½c., New York, and 4.32½c., St. Louis. London has declined 2 shillings and 9 pence, coming to-day £11 3s.

**Spelter**—Is a shade firmer, but quiet again, with 3.92½c. to 3.97½c. quoted for spot. St. Louis is quoted sellers at 3.80c. London advanced to £17 2s. 6d.

**Antimony**—Is unchanged at prices quoted last week. Hallett's is held at 8½c. to 8¾c., and Cookson's 10¼c. Other brands 8¼c. to 8½c.

**Nickel**—Is unchanged at prices which have ruled for some time, being on a basis of 60 cents for lots not covered by yearly contracts.

**Quicksilver.**—Prices are unchanged, being $51 per flask of 76½ lbs. in lots of 50 flasks or more. Continues to quote £9 flat.

**Tin Plate.**—The situation remains unchanged. The London market advanced 1½ pence to 15 shillings and 9 pence. The steamer which arrived from Swansea last Monday had on board about 20,000 boxes, more than half of which it is said will go into consumptive channels here, the drawback plates amounting to but 8000 boxes.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

| | Reporting mines. | Outside sources. | Total U.S. product. | Product foreign mines. | U. S. exports. |
|---|---|---|---|---|---|
| First half 1895.... | 70,612 | 9,100 | 79,712 | 42,484 | 34,215 |
| Second half 1895... | 84,885 | 6,600 | 91,485 | 43,674 | 30,507 |
| Total 1895..... | 155,497 | 15,700 | 171,197 | 86,178 | 64,722 |
| First half 1896.... | 94,180 | 7,200 | 101,380 | 42,255 | 58,216 |
| Second half 1896... | 95,314 | 7,200 | 102,514 | 43,941 | 67,287 |
| Total 1896..... | 199,494 | 14,400 | 203,894 | 86,196 | 125,503 |
| First half 1897.... | 103,651 | 5,000 | 108,651 | 44,263 | 64,870 |
| Second half 1897... | 100,555 | 6,900 | 107,455 | 44,007 | 64,340 |
| Total 1897..... | 204,206 | 11,900 | 216,106 | 88,270 | 129,210 |
| First half 1898.... | 112,687 | 7,800 | 120,487 | 40,880 | 68,284 |
| Second half 1898... | 103,535 | 10,250 | 113,785 | 43,674 | 76,831 |
| Total 1898..... | 216,222 | 18,050 | 234,272 | 84,554 | 145,115 |
| First half 1899.... | 111,987 | 12,500 | 124,487 | 43,629 | 56,460 |
| Second half 1899... | 118,818 | 18,900 | 137,719 | 45,611 | 63,351 |
| Total 1899..... | 230,806 | 31,400 | 262,206 | 89,240 | 119,811 |
| First half 1900.... | 114,177 | 20,400 | 134,577 | 43,153 | 90,747 |
| Second half 1900... | 113,810 | 20,400 | 134,104 | 46,278 | 69,335 |
| Total 1900..... | 227,987 | 40,800 | 268,681 | 89,431 | 160,082 |
| First half 1901.... | 112,794 | 20,600 | 133,394 | 46,847 | 50,027 |
| July, 1901..... | 18,585 | 3,400 | 21,985 | 9,254 | 6,824 |

The Society of German Engineers has undertaken an important work in the preparation of a trilingual technical dictionary, designed to comprehend all the terms used in the technical sciences. This publication, under the name of Technolexicon, will include three languages, English, German and French, and will give all the known technical words and expressions in use, with the source of each. The society has secured the services of the well-known German lexicographer, Dr. Herbert Jansen, as editor, and has established an office at 49 Dorotheen strasse, Berlin, N. W. The co-operation of all technical and trade societies or associations is desired by the publishers in the preparation of this *magnum opus*.

*QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING AUGUST 21, 1901*

| Cap'l Issued. | | Thursday. | Friday. | Saturday. | Monday. | Tuesday. | Wednesday. | Closing quotations. | Sales. |
|---|---|---|---|---|---|---|---|---|---|
| $10,000,000 | Am. Bicycle Co., Com..... | - 3 | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 20,000,000 | Am. Bicycle Co., Pref..... | ..... | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 10,000,000 | Am. Bicycle Co., Bonds.... | ..... | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 29,000,000 | Am. Car & Foundry, Com.. | 29 -29¾ | 29¼-29⅝ | 29 -29⅝ | 29 -29⅛ | 29⅜ -29⅝ | 29 -29¼ | 29¼ | 3,600 |
| 29,000,000 | Am. Car & F'ndry, Pref.§.. | 84¼-84½ | 84½-85¼ | -85⅛ | -84¾ | -85 | 84⅝-84⅞ | 84⅞ | 2,200 |
| 7,500,000 | Bethlehem Iron†..... | -61½ | -61½ | ..... | ..... | -61 | ..... | ... | 1,000 |
| 15,000,000 | Bethlehem Steel‡‡..... | ..... | -23 | -23½ | -23½ | 23¾-24 | ..... | ... | 2,800 |
| 7,974,550 | Cambria Iron, Phila.*..... | ..... | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 45,000,000 | Cambria Steel*..... | 23¼-24¼ | 23⅞-24½ | 23⅞-24 | 23¾-24 | 23⅝-24 | 23¾-24¼ | 24¼ | 24,000 |
| 17,000,000 | Colorado Fuel & Iron..... | 98 -99½ | -98 | ..... | ..... | -95 | -97¾ | 97¾ | 1,000 |
| 24,410,900 | Crucible Steel, Com..... | ..... | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 24,399,500 | Crucible Steel, Pref..... | ..... | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 1,975,000 | Diamond State Steel‖§§... | - 3 | - 3 | ..... | ..... | ..... | ..... | ... | 200 |
| 15,000,000 | International Pump, Com.. | -38⅜ | 40 -40¾ | -40½ | 40½-40¾ | 40⅝-42 | 42 -42¼ | 42 | 6,800 |
| 8,850,000 | International Pump, Pref.. | ..... | ..... | 81¼-81½ | ..... | -83 | -83¼ | 83¼ | 200 |
| 11,000,000 | International Silver..... | - 7 | ..... | ..... | 7½- 8 | 7½- 8 | ..... | ... | ..... |
| 10,750,000 | Penna., new, Com., Phila.. | ..... | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 16,500,000 | Penna., new, Pref., Phila.§. | -340 | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 12,500,000 | Pressed Steel, Com..... | -41¾ | -41 | ..... | -41½ | -41½ | -40½ | 40½ | 1,000 |
| 12,500,000 | Pressed Steel, Pref..... | ..... | -82¾ | ..... | ..... | 83 -84½ | ..... | ... | 400 |
| 27,191,000 | Repub. Iron & Steel, Com.. | 20 -20¼ | 20⅝-21½ | 20½-21⅜ | 20⅜-21 | 20⅝-21 | 20⅞-21⅜ | 21 | 22,700 |
| 20,306,900 | Repub. Iron & Steel, Pref.. | 74 -75 | 75¼-76½ | 75½-76⅜ | 75 -75½ | 75¼-75¾ | 75½-76 | 75½ | 9,100 |
| 7,500,000 | Sloss-Sheffield S. & I., Com. | ..... | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 6,700,000 | Sloss-Sheffield S. & I., Pref.§. | ..... | ..... | ..... | ..... | ..... | ..... | ... | ..... |
| 20,000,000 | Tennessee Coal & Iron..... | 62 -64 | 63⅛-64 | 62¼-63 | 61¾-62¾ | 62¾-63⅞ | 63½-64⅞ | 64 | 12,620 |
| 1,500,000 | Tidewater Steel‖..... | ..... | 6 - 6½ | 6 - 6⅝ | - 6½ | 6½- 7 | ..... | ... | 1,500 |
| 506,473,400 | U. S. Steel Co., Com.‖‖.... | 43⅞-44½ | 43½-43⅞ | 42⅝-43¼ | 42¼-43⅜ | 41⅞-42¾¶ | 42¼-42⅝ | 42½ | 124,175 |
| 508,486,300 | U. S. Steel Co., Pref.‖‖.... | 93 -93½ | 92¾-93¼ | 91½-92¼ | 91⅛-91⅞ | 91⅞-92½ | 92¼-92⅝ | 92⅝ | 58,000 |
| 1,500,000 | Warwick I. & S.‖..... | ..... | - 7 | - 7 | ..... | ..... | - 7 | ... | 300 |

Preferred stocks 7 % cumulative unless otherwise stated. § 7 % Non-Cu. §§ New stock. ‖ Par $10. ‡‡ Par $50, $1 paid in. ‖‖ Authorized Capital $350,000,000 Common; $555,000,000 Preferred; * Par $50. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ¶ Ex-dividend.

**Bonded Indebtedness:** American Bicycle Co., $10,000,000 sinking fund gold debentures 5 %; Cambria Iron Co., guaranteed 4 % per annum on $50 par by Cambria Steel Co.; Cambria Iron Co., $218 000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Diamond State Steel Co., property leased from Diamond State Steel Co. at 4 % on $1,000,000, $6.25 on Steel stock paid in, $1.25 called for June 1st, total capital $2,000,000; International Pump: Blake & Knowles S. P. Co $1,000,000 6 %; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 % Steelton 1st, 1917, $2,000,000 5 % Sparrow's Point 1st, 1922, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907, interest and principal guaranteed by Bethlehem Steel Co.; Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co., Col Fuel Co. Gen. Mort. 6 % $880,000, Col. Coal & Iron Con. Mort., 6 % $2,643,000, Col. Fuel & Iron Gen. Mort. 5 % $2,674,000, also outstanding $2,000,000 preferred stock; Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $2,000,000. U. S Steel Corporation $304,000,000 5 % gold bonds, also Am. S. & W. Co. $130,656, Federal Steel Co. $9,822,000 Illinois 5 %, $7,417,000 E. J. & E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 % $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel $2,561,000 6 %.

## Iron and Industrial Stocks.

The week has been an uneventful one in steel stocks, the bulk of the trading, what there was of it, being in the United States Steel issues, which have been quite steady. There has been rather more activity than usual in Republic, which is credited with doing exceedingly well on account of the strike.

| | Bid. | Asked. |
|---|---|---|
| E. W. Bliss, common | 145 | 152 |
| E. W. Bliss, preferred | 130 | 140 |
| Cramp's Shipyard stock | 79 | 82 |
| Empire Iron & Steel, common | 4 | 5 |
| Empire Iron & Steel, preferred | 30 | 35 |
| National Enam. & St., common | 22 | 25 |
| National Enam. & St., preferred | 83 | 86 |
| New Haven | 4⅜ | 4⅞ |
| Otis Elevator, common | 32 | 34 |
| Otis Elevator, preferred | 97 | 98 |
| Pratt & Whitney, preferred | 85 | 90 |
| U. S. Cast Iron Pipe Company, common | 7 | 8 |
| U. S. Cast Iron Pipe Company, preferred | 33½ | 34½ |
| U. S. Projectile | 119 | .. |
| Va. C. I. & C., stock | 7 | 9 |
| Va. C. I. & C., bonds | 40 | 42 |
| H. R. Worthington, preferred | 111 | 113 |
| American Can Company, common | 22⅞ | 23⅛ |
| American Can Company, preferred | 73 | 73½ |

**Cambria Steel Company.**—At a meeting of the Cambria Steel Company the capital stock was increased to $50,000,000, and it was voted to absorb the temporary company, the Conemaugh Steel Company, who were organized to facilitate the readjustment. Three new directors were elected, at least two of them representing the Pennsylvania Railroad Company's interest in the property. The new directors are Leonard C. Hanna of Cleveland (a brother of Senator Hanna), Frank J. Firth, president of the Erie & Western Transportation Company (a Pennsylvania Railroad property), and Theodore N. Ely, superintendent of motive power of the Pennsylvania Railroad Company. Of the old directors, Effingham B. Morris is a director of the Pennsylvania Railroad, while John Lowber Welsh, George F. Baer and E. T. Stotesbury are closely identified with the Reading Company.

**American Shipbuilding Company.**—For the year ending June 30, 1901, the American Shipbuilding Company report earnings of $1,998,542. Deducting dividends of 7 per cent. on the preferred, amounting to $553,000, there was a balance of $1,445,542. After writing off for depreciation $271,904, there remained a surplus of $1,173,638, which, added to the previous surplus of $568,665, carries the total surplus to $1,742,303. The balance sheet is as follows:

*Resources.*

| | |
|---|---|
| Plants and property | $14,633,683 |
| Additions and improvements | 359,613 |
| Materials on hand | 549,315 |
| Accounts and bills receivable and cash | 1,976,155 |
| Work under construction; balance due | 1,187,544 |
| Total | $18,706,312 |

*Liabilities.*

| | |
|---|---|
| Preferred stock | $7,900,000 |
| Common stock | 7,600,000 |
| Accounts payable | 1,214,008 |
| Bills payable (since paid) | 250,000 |
| Surplus, June 30, 1901 | 1,742,303 |
| Total | $18,706,312 |

President Brown says: "During the year the company have acquired by purchase, without increasing the capital stock, the two dry docks, construction plants, machine shops, &c., of the Union Dry Dock at Buffalo, and leased the real estate, with options to purchase on terms favorable to the company. The number of vessels built during the year was 40, with a carrying capacity of 191,000 net tons. There are 21 vessels under construction and 847 vessels were docked for repair."

The terms of the transfer of the Shelby Steel Tube Company to the United States Steel Corporation are said to be one share of United States Steel common for four shares of Shelby common and one share of United States Steel preferred for two and two-third shares of Shelby preferred. To acquire on these terms the entire outstanding capital stock of the Shelby Company would require about $2,044,000 common stock and $1,875,000 preferred stock of the United States Steel Corporation.

The Utica Trust & Deposit Company are offering at par and interest $100,000 of the $500,000 first mortgage

sinking fund 5 per cent. gold bonds of the Vaughn Machine Company. They are dated August 1, 1901, payable August 1, 1911. It is claimed that the average net earnings during the four years last past were eight times the amount required to pay interest.

**The St. Clair Furnace Company.**—At Pittsburgh 5 per cent. first mortgage bonds of the St. Clair Furnace Company are being offered for sale. Principal and interest of these bonds is guaranteed by the Crucible Steel Company of America, the parent company.

**Dividends.**—The National Lead Company have declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable September 16. Books close August 23; reopen September 17.

The Park Steel Company have declared 1¾ per cent. on preferred stock, the regular quarterly dividend.

## The New York Machinery Market.

NEW YORK, August 21, 1901.

A most interesting piece of information to the trade has just come to hand in the form of the schedule of proposed new German import duties. Such portions of the schedule as relate to the machinery and iron and steel trades are printed in another column. The advances proposed over the present duty on machinery items are remarkable for their severity. Machines have been classified or graded according to weight, and the proposed duty imposed upon articles of lighter weight is much heavier than on machinery of the same style but of heavier build. While on the smaller classes of machines a tariff has been placed which on its face seems prohibitive, the medium and heavy weight goods which are most extensively exported to Germany from this country have had fixed upon them a figure considerably in excess of the present schedule. This is especially noticeable in the instances of steam engines and machinery direct connected to steam driving apparatus. With the present absence of demand for machinery in Germany the new tariff schedule is not of so much importance, but if the revival of industrial activity there which is now predicted is genuine and better conditions present themselves at the time when it is likely that the new tariff will take effect should it receive the favorable action of the German Government, it will prove a serious handicap to the resumption of the exportation of American machinery to Germany.

In the instance of metal, wood and stove making machinery, including all classes of machine tools, hammers, presses, &c., the present schedule provides a duty of 3 marks. Under the new schedule the duty is as follows:

| | |
|---|---|
| Up to 250 kg | 20 marks. |
| 250 to 1,000 kg | 12 marks. |
| 1,000 to 3,000 kg | 8 marks. |
| 3,000 to 10,000 kg | 6 marks. |
| Beyond 10,000 kg | 4 marks. |

It will therefore be seen that even upon the class including the very largest types of machines the new rate is one-third greater than the present. The class including machines weighing between 250 and 1000 kilos, or which run below a ton in weight, it will be seen are taxed four times the present rate. This class includes many of the types of machines for which America has found a ready market in Germany. But in the next class, which includes machines running from 1 to 3 tons, the weight is more important. This class takes in the best selling American tools, and it will be observed that the new duty is almost a trebling of the existing duty.

Steam engines, turbines and machines to which they are attached, such as pumps, refrigerating machines, blowers, &c., are more closely divided, and the advances are much greater in the instances of the smaller sizes of machines. The present schedules on these goods is 3, 5 and 8 marks, while the proposed schedule provides for a scale running from 3½ to 100 marks. In the smaller sizes of this class of apparatus, in which a good export business has been done, the proposed change is considerably more than double the present tariff. On heavier classes the rate per kilogram is not so great, but as the present rate is already a considerable handicap to American builders owing to the close competitive conditions existing, it will prove a strong barrier if the schedule as proposed at present is enforced. While it is not an absolute certainty that the German Reichstag will adopt the proposed schedule exactly as it stands, there is a powerful influence supported, of course, by all German industrial branches, endeavoring to bring this about. On the other side stand only the few American dealers, and it is not considered that their feeble resistance will be of much account. In all events, should the schedule be adopted, it cannot become effective prior to 1903, until which date the existing commercal treaties between this country and Germany will remain in force.

In connection with the condition of trade in American machinery in Germany a most interesting state of affairs is disclosed by the fact that German dealers are endeavoring to reship American machine tools to this country and sell them in the open market. For a number of weeks an English concern and a German machinery house have been endeavoring to sell in this country certain machine tools which they purchased here some time ago, and have been unable to dispose of. Now we hear of another very large German house whose American representative is also willing to dispose of a number of American machines, which have been in stock in Germany for some time.

General conditions here remain quite unchanged.

Encouraging reports predicting an active fall trade are to be heard in all lines. A fair amount of shopping trade is also reported, but no large transactions in machine tools were recorded during the week. Ever since the Rock Island Arsenal muddle the machinery merchants interested in the disputed items have held a discreet silence regarding the matter. It has now leaked out that the awards have been made in a quiet way. The much talked of item including 240 milling machines, we are informed, has been awarded to the Hendey Machine Company of Torrington, Conn., some weeks ago. They are now at work filling the order.

It was rumored in the street that the Pennsylvania Railroad Company intend establishing an extensive system of car shops at Camden, N. J. At the offices of the company no information could be obtained regarding the matter, but a party in the trade states that plans are being prepared at both the Philadelphia and Jersey City engineering departments for the proposed shops.

There was also a rumor afloat to the effect that a 20,000 horse-power plant was projected and would soon be out for estimating. The identity of the concern projecting the plant could not be obtained.

Awards of the engines and boilers to be installed in the proposed power station of the New York Rapid Transit Underground Railway have been deferred for two weeks. As previously stated in this column, the bids have been in for some weeks, and it was expected that the contracts would be awarded this week. Chief Engineer Van Vleck stated to-day, however, that the matter would not be decided until week after next. There is much speculation being indulged in by the trade as to who the fortunate bidders in this work will be. Besides satisfying general interest, the awarding of these great contracts will also decide the matter of various accessories, the builders of which have been working with the various bidders on the boilers and engines for some time.

Further purchases have been made for the equipment of the large new power stations which are being erected at Rochester and Utica by the Equitable Gas & Electric Company and at Brooklyn by the Brooklyn Heights Railroad Company. The orders were for feed water heaters and were placed by Engineer Thomas E. Murray of 55 Duane street, with Charles H. Paine of 85 Liberty street, who is the sales representative of the Taunton Locomotive Mfg. Company of Taunton, Mass., builders of the Wainwright even flow feed water heaters. In the instance of the Brooklyn Heights plant the contract calls for 12,000 horse-power of Wainwright heaters. For the Rochester and Utica plants the Equitable Gas & Electric Company of Rochester have ordered 6000 horse-power of Wainwright heaters.

Orders for the generating units required by the Keystone Improvement Company in their new power house to be built in connection with their high tension trolley

line running for 26 miles between Hazelton and Wilkes-Barre, Pa., have just been placed. L. B. Stillwell, electrical director of the New York Rapid Transit Underground, has made the awards, being in charge of the work. The contract for the engines has been awarded to Woolston & Brew of 39 and 41 Cortlandt street, and Ames Building, Boston. This order calls for three 600 horse-power Brown engines direct connected to Westinghouse alternating machines. The boilers have been purchased from the Heine Safety Boiler Company, whose New York office is located at 11 Broadway.

The American Woolen Company of Boston have just placed an order with Woolston & Brew for two 500 horse-power Brown engines.

The Republic Iron & Steel Company have placed extensive orders for a new boiler plant to be built at their Youngstown, Ohio, plant. The plant will have a capacity of 5000 horse-power. Ten 250 horse-power Stirling boilers and five 500 horse-power boilers of the Babcock & Wilcox type have been ordered. All will be equipped with Roney stokers furnished by the Westinghouse-Church-Kerr Company.

The largest order for machine tools reported during the week was placed by the Boston Elevated Railroad Company. The business was captured by Manning, Maxwell & Moore, and included a number of heavy wheel lathes, wheel presses, engine lathes, drill presses, car wheel grinders, &c., for installation in a new machine shop now being erected in connection with the Boston Elevated system. The machines will almost all be electrically driven.

The Pennsylvania Cement Company of Bath, Pa., have ordered a 200 horse-power and 300 horse-power Ridgway engine and generator sets from McClave, Hamilton & Rimmer of 85 Liberty street, who have also sold two 60-kw. and one 40-kw. direct connected Ridgway generating sets to Robert H. Spalding, who is erecting an apartment hotel on Thirty-fifth street, New York.

## The Chicago Molders.

*(By Telegraph.)*

CHICAGO, Ill., August 21, 1901.—The striking molders in this city are rapidly losing ground. The National Founders' Association now have seven foundries running with a full force of men brought here from other cities, and during the past week the entire old force of four other foundries returned to work unconditionally at their old rate of wages. Indications are strong that a number of other foundries will speedily open with their old workmen. Molders are now coming in too rapidly from other points.

### The Machinists in Chicago.

CHICAGO, ILL., August 21, 1901.—*(By Telegraph.)*—The machinery manufacturers whose men are still striking are daily making gains in their force of workmen. Applications for work are being received by the Metal Trades Association here from all over the country, and it now appears very probable that the manufacturers will have all the machinists they need in a few days.

**Large Order for Barges.**—Jones & Laughlins, Limited of the American Iron & Steel Works, at Pittsburgh, have given a contract to the McKeesport Sawmill Company for 50 barges. These will be used by Jones & Laughlins in hauling coal to their mills on the South Side, Pittsburgh.

The steamer "William Edenborn," owned by the United States Steel Corporation, recently delivered a cargo of 7308 tons of ore at the Ashtabula docks. This is said to be the largest cargo ever brought down the lakes on one vessel.

"Mica in the Province of Quebec" is the title of a monograph in French by J. Obalski, Government mining engineer of Quebec. It describes the deposits of the province in detail.

## The Philadelphia Machinery Market.

FORREST BUILDING, August 20, 1901.

The condition of the Philadelphia machinery market is little changed from that of last month, and may be characterized as a dull and listless waiting market, with little new business being done except in some few branches which continue fairly active. The trade feels the depressing effect of the various labor difficulties which have menaced it during the past few months, and, after delays in adjusting the labor question with their own employees, are now troubled with further delays in the production of some lines of machinery by the non-delivery of some of the various raw materials entering into their manufacture. Inquiries are reported to be in fair volume in nearly all branches of the trade, but have not materialized into the desired orders as rapidly as was hoped for. This is attributed to the general unsettled condition of trade which has been caused by the extended labor difficulties in the Middle West, and it is expected that it will improve only as that situation clears. Many shops continue quite busy, but in most cases on orders previously booked, and some are favored with enough work on hand to run them well into the fall months. The prospect, however, is more encouraging in the fact that several large plants about to be erected will before long place their requirements before the trade, and the erection of a number of large office buildings contemplated, or under way, will offer a good field for certain branches of the trade.

The foreign demand is unchanged. New business is rather limited, although a number of the manufacturers who have a well established export trade are doing about the usual amount of business.

General deliveries are not as good as they were last month. The inability of some manufacturers to get their supplies of raw materials as rapidly as they desire is largely responsible for this condition. Foundries, although not so hard pushed as earlier in the year, are, owing to the heated term, not as prompt on deliveries as many of their customers desire. This cause, however, should disappear in the near future.

The demand for heavy machine tools, cranes and heavy general machinery continues the most active, and there has probably been a slight increase in the bookings in these lines during the past month. The general line of machine tools has, however, not been so active, and the waiting market is here most noticeable. Some of the manufacturers of the smaller machine tools are actively employed and have a large amount of work on hand.

Continued activity is to be noted at the various shipyards and the locomotive works. These plants are running at their best capacity and making record productions in their respective branches.

Among the manufacturers and dealers in the smaller engines, boilers and general supplies the month's business has been very satisfactory. Inquiries have been numerous and a good number of orders have been booked. Machine shop supplies have been taken in larger quantities and the condition of the trade is considered favorable. Prices are reported unchanged, but not as firm as many manufacturers and dealers would like. There are reports of underselling in some lines, but this does not appear to be to any marked extent.

The Hess Machine Company, manufacturers of file making machinery, continue busy on a number of orders for export, and the demand for file machinery from that source remains good, while domestic trade has fallen off. Shipments recently made include 14 sets of file making machines for export to England, France and Germany.

The Philadelphia Machine Tool Company continue very busy on a general line of presses, shears and testing machines, several of which have recently been shipped for local delivery. This company have recently been appointed sole agents for the testing apparatus of Gus C. Henning, the well-known engineer and specialist on testing metals. These instruments include the Henning pocket recorder, double electric contact micrometer, Mirror extensometer, roller extensometer and bridge extensometer, with or without autographic device. They

have also been appointed agents for Leggoe file grinding machines.

The Philadelphia Pneumatic Tool Company have recently shipped a number of their different sized pneumatic rammers to various parties to be used in the ramming of concrete and cement work, for which they have proved to be very efficient. They have also made an extensive shipment of various tools for export to England, and numerous deliveries are constantly being made on domestic orders. All departments of their plant are running to their full capacity and orders on hand are sufficient to carry them well into the fall months.

W. E. Shipley (Philadelphia branch the Lodge & Shipley Machine Tool Company) reports a good volume of business. Inquiries have been numerous and a number of lathes, planers and other tools have been delivered to local and nearby parties. Trade in Reeves' variable speed pulleys is said to be in a very satisfactory condition.

The Franklin Machine Works, Incorporated, have had a very satisfactory month's business. Inquiries and orders have been numerous and a large amount of work is in course of construction. A number of additional machine tools for their own use have been installed and their facilities for rapid delivery materially increased.

I. H. Johnson, Jr., & Co. continue busy in all departments. Inquiries have been numerous and several very satisfactory orders have been taken, among which was one 60-foot lathe for local delivery. Shipments for the Middle West have recently been made which included among others one lathe of 40 feet length.

Alfred Box & Co., manufacturers of electric cranes, hoists, &c., report a very satisfactory condition of trade. Inquiries are numerous and a number of good orders have been taken. Among some recently booked may be mentioned one 15-ton hand power traveling crane, 49-foot span, for the Utica, N. Y., station of the Equitable Gas & Electric Company, Utica, N. Y.; one 20-ton hand power traveling crane, 34-foot span, for the Fulton Street Annex Station, and one 50-ton three-motor electric crane, 27-foot span, for the Eastern Power Station of the Brooklyn Heights Railroad Company, Brooklyn, N. Y.; one 25-ton four-motor electric crane, 98-foot span, for the Waterside Station of the New York Edison Company, New York; one 35-ton three-motor crane, 74-foot span, for account of Brady & Young, 100 Broadway, N. Y., to be erected in a power station in Rochester, N. Y.; two 5-ton three-motor traveling cranes, 35-foot span, for the extension to the new steel foundry of the General Electric Company, Lynn, Mass.; one 4-ton three-motor traveling crane, 25-foot span, for the General Electric Foreign Department, Schenectady, N. Y.; one 45-ton electric crane, 25-foot span, and one transfer table, 50 feet long, capacity 80 tons, for export to Japan. Recent deliveries include one 5-ton, 60-foot span, three-motor electric crane for the Tidewater Steel Company, Chester, Pa., and one 8-ton, 40-foot span, three-motor electric crane, including generator, rails and wiring, for H. Butterwort & Sons Company, Incorporated, Philadelphia, Pa.

The Tabor Mfg. Company, manufacturers of molding machines, &c., are busy in all departments of the plant. Inquiries and orders, both foreign and domestic, continue numerous and satisfactory. Two 16 x 26 inch special vibrator molding machines are nearly completed for export to Germany, and two special machines for molding standard 5 x 9 inch journal boxes are building for a Western foundry company. A large 36 x 36 inch special machine for the General Electric Company is nearing completion, and orders for a number of others for the same parties are on the books. General standard molding machines are now being built by this company in lots of 50 or more only.

The Energy Elevator Company are manufacturing a new type of elevator, one used to convey and place in ice baths patients suffering from high fever. One of these was manufactured for a prominent hospital in this city some time ago, and one is now in course of construction for the Pennsylvania Hospital of Philadelphia. The other branches of their elevator business continue very active, and all departments of the plant are being operated to their best capacity.

Continued activity is to be noted at the plant of the Baldwin Locomotive Works, all departments being operated on full time. During the first six months of the year this company completed 652 locomotives; this, compared with the first six months for 1900, during which less than 600 were completed, shows a remarkable increase in the productive capacity of the company. The new machine shop now under construction at Sixteenth and Spring Garden streets will when completed add additional facilities for further increase in production. Inquiries and orders for locomotives continue in satisfactory number, and the trade is considered to be in a favorable condition. Recent deliveries include shipments to a number of the important railway systems of the United States, and 23 engines of special type will be shipped from New York this week via the steamer "Knight of St. George" for the Government railways of New Zealand.

V. Ebert, furniture manufacturer, East Girard avenue and Vienna street, has had plans prepared for the erection of a large new factory which will be located in the northern part of the city. New engines, boilers and pumps, as well as general and special wood working machinery, are to be installed.

Plans and specifications for the recently incorporated Whitney Car Wheel Company, whose new plant is to be located in Camden, N. J., have been prepared and estimates on the same are being asked. It is said that the plant will consist of a main foundry of brick, 100 x 200 feet in diameter, with an iron truss and slate roof; a one-story brick engine house, 40 x 40 feet, with an iron truss and slate roof; a two-story brick machine and pattern shop, 50 x 80 feet, with a tin roof; a one-story brick core shop, 25 x 25 feet, with a slag roof, and a three-story buff brick office, 20 x 25 feet, with a slate roof, all of which will be located on a lot 400 x 500 feet in size. The capacity of this plant when in operation is estimated at 100 tons of iron per day, or 85 tons of finished castings. It is expected that operations on the various buildings will be started at an early date, while the estimates for the machinery and equipment will not be asked for until some future time. Joseph McClain of New York is president; J. Lancaster Daily, vice-president; J. Fernley Brooks, secretary, and Joseph P. Mumford, treasurer.

## OBITUARY.

H. Charles Ballard, inventor of the Ballard rifle, died at his home in Worcester, Mass., August 9. Previous to the Civil War he was foreman in the Worcester factory of Ball & Williams. He obtained patents on a breech loading rifle in 1860 and Ball & Williams manufactured it. Mr. Ballard retired from business some years ago.

John Edwards Sylvester, head of the firm of Sylvester & Co., of Boston and Somerville, manufacturers of ship and railroad spikes, died of heart failure at his home in Somerville, Mass., August 12. He was born in Danvers, Mass., in 1839. While a young man he and his father established a spike manufactory in Somerville. He succeeded his father in 1865 and conducted the business until his death.

Capt. William O. Douglas, one of the founders of the Berlin Iron Bridge Company of East Berlin, Conn., died on August 16, at his home in Binghamton, N. Y., of Bright's disease. Captain Douglas was a graduate of West Point and when the Civil War broke out held a commission in the regular army. He afterward engaged in business.

Sir Roylton Dixon, the famous English shipbuilder and head of the firm of Sir Roylton Dixon & Co., of Middlesborough, died recently after a long illness, at the age of 63 years.

Sir William Laird of the firm of William Baird & Co., of Glasgow, Scotland, a well-known Scotch ironmaster, died on August 14.

Charles W. Seabury, for 26 years treasurer of the Calumet & Hecla Mining Company, died on August 11, at his home in Boston, Mass., aged 70 years. Mr. Seabury was a native of Tiverton, R. I.

# HARDWARE.

There is an evident lack of harmony among manufacturers of Builders' Hardware, which results to their disadvantage as well as that of the trade at large. There are apparently discordant and warring policies whose influences reach all down the line even to the consumer. Whether the manufacturer shall sell the jobber only, or the retailer only, or endeavor to sell both, is now largely a question of personal judgment rather than any attempt at long headed policy. The result is that the goods are not only sold in the most expensive way possible, but along with the fiercest competition. Sizes, kinds and assortments have multiplied most unnecessarily, and stocks of course are in accordance. That the whole business could be done at half the expense and with half the kinds seems obvious enough, and is clearly seen by some of the manufacturers, but it would take concerted action to remedy the trouble, and so far this has not been attainable.

There is a good deal of complaint among the trade as to the manner in which jobbers handle this line of goods, often competing with the retailers, but the fact seems to be that the jobber of Builders' Hardware finds himself the inheritor of evils he is powerless to remedy. Not only is he in constant competition with the manufacturer (sometimes the very firm he draws his supplies from), but he finds that the very core of the Hardware business is the most demoralized, the most unpromising and one of the least interesting—comparing present conditions with possibilities—of all the Hardware lines. Any well ordered, economical and modern system of distribution seems out of reach under present conditions. To find some remedy for this unreasonable and unsatisfactory state of things is one of the problems before the trade.

The Builders' Hardware situation is further complicated by the fact that a number of jobbers have found it advantageous to add retail stores to their wholesale establishments. Where the matter is handled with discretion and judgment there may be an actual benefit to the retail trade in general from this arrangement. The retail store branch gives the jobbing house the opportunity of carrying a finer and better assortment of Builders' Hardware than is possible to a jobbing house only, so that the retail customers in the country can draw upon the house for those pieces of fine Hardware which are constantly being wanted, and which otherwise would go through the tedious process of being ordered specially from the factory. Then the trained and experienced salesmen of the retail branch can be used to figure plans and specifications on contract work for the benefit of the country dealer who has neither the experience nor the means of doing this.

In competition with city retailers the retail branch of a jobbing house should always be a sustainer of prices, while it makes a point of not shipping to the country at all but confining its sales to the city in which it is located. It is of interest to note that a branch retail establishment of one of the large jobbing houses in one of our great cities has made its greatest success by rigidly adhering to these principles.

The meeting of the Michigan Retail Hardware Dealers' Association, held last week in Detroit, is a good example of the beneficial results of such gatherings. There is abundant evidence that the coming together of merchants cultivates the spirit of fraternity and tends to diminish the antagonisms which often characterize the relations of competitors. In the case of the Michigan association substantial good to the trade at large was accomplished in the modifications of laws which were found to work hardship and imperil credits. At such gatherings of broad and enterprising merchants many practical suggestions are brought out which can be applied with advantage to the conduct of business, and those who have attended the meetings go back to their work amply repaid for the time thus expended. At the Detroit convention the reports presented in regard to the progress made in combating the competition of department stores and catalogue houses were encouraging.

## Condition of Trade.

The demand for all classes of goods continues large, intensified by the prospects of a good fall trade and the apprehension of being unable to obtain goods promptly. While the strictly Hardware business thus far has perhaps been inconvenienced less than some of the heavier lines of business, many orders have found their way to jobbers' and manufacturers' back order books through their inability to fill them promptly. Developments in the strike situation are followed closely by the trade, and while the ultimate outcome is not questioned, the temporary menace to trade interests is deplored.

### Chicago.

*(By Telegraph.)*

Veteran Hardwaremen consider the strike in the mills of the United States Steel Corporation a much greater disturbing element in the business situation than the shortage of the crops. It is observed that the dealers located in sections which were visited most severely by drought are free purchasers of merchandise and appear to have little apprehension for fall and winter trade. As long as they manifest no special concern, it is certainly reasonable to believe that interests at a remote distance from such districts should feel no serious misgivings on that account. The strike, however, is curtailing the supply of many classes of goods. It affects trade in this way at present, but if it continues, and especially if it spreads, it will hurt general business. Thus far the Hardware trade has not been injured. Trade this month is fully as heavy as in preceding months. The demand is, of course, intensified by the desire of dealers to receive fall goods on contracts made earlier in the year. Everybody is endeavoring to anticipate the threatened scarcity in all classes of products affected by the strike. Sheets, Tin Plates, Light Hoops and Bands and the long line of goods manufactured from such materials are exceedingly scarce. Danger now confronts the trade of a scarcity in Wire Nails and other Wire products. Prices are firm, and in some cases, notably in Tin Plate and Enameled Ware, sharp advances have already been made.

### St. Louis.

*(By Telegraph.)*

Jobbers report a steadily increasing business, as the warm weather slowly gives way to the approaching fall season. An interesting feature is the number of new stocks that are being bought. This is always noticeable late in the summer months, but this year the number is larger, and the stocks ordered are considerably heavier than in previous years. The advancing tendency in prices generally has had considerable to do with the increased business. Dealers are buying more liberally, and seem to have no misgivings concerning the fall trade. So far as the crops are concerned the trade now know the general situation, and the consensus of opinion is that the strike in the steel trade is the only discouraging feature, and this they expect to see settled very

shortly. The demand for Builders' Hardware is unusually heavy and is expected to continue so. Sheets are, of course, hard to get, and in some cases fancy prices are asked, where the buyer is in urgent need.

## NOTES ON PRICES.

**Wire Nails.**—Demand for Wire Nails continues good, with orders for small lots in the majority of cases. Competition is causing some irregularity in prices. Notwithstanding the advancing tendency of raw material quotations remain unchanged, as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.30
To jobbers in less than carload lots..... 2.35
To retailers in carload lots..... 2.40
To retailers in less than carload lots..... 2.50

*New York.*—Wire Nails are moving in satisfactory volume. A large number of buildings and improvements are projected or under way, and a good fall demand is anticipated. Quotations are as follows:

To retailers, carloads on dock.....$2.53
Small lots at store..... 2.60

*Chicago, by Telegraph.*—The closing of the Joliet Rod mills of the Illinois Steel Company threatens the early closing of the American Steel & Wire Company's Wire mills at that point, as they are dependent on the Rod mills for their supply of raw material. This causes considerable excitement in the Wire Nail trade and the demand has increased heavily. Orders are being taken subject to the ability of the manufacturers to make shipments. Jobbers also report an exceedingly active demand for Wire Nails and prices are very firmly held. Jobbers are already refusing to take carload orders. Carload lots are quoted at $2.45 and small lots at $2.55, with a concession to $2.50 to best buyers.

*St. Louis, by Telegraph.*—The demand for Wire Nails is showing a steady increase and prices are being well maintained. Outside makers are reaching into this market, but prices fail to show any disposition to decline, as the demand is sufficiently heavy to take care of what surplus stock is offered. We quote carload lots to retailers at $2.50, base, and less than carload lots at $2.55 to $2.60.

*Pittsburgh.*—The trade are buying Wire Nails conservatively, placing orders mostly for small lots. The scarcity of Steel and the higher prices being paid for it have made the price of Nails firmer, and it is claimed there is very little cutting being done, and only on attractive orders. Wire Nails are quoted f.o.b. mill, instead of Pittsburgh, as formerly. We quote f.o.b. mill, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.30
To jobbers in less than carload lots..... 2.35
To retailers in carload lots..... 2.40
To retailers in less than carload lots..... 2.50

**Cut Nails.**—The advance of raw material and the probable difficulty of obtaining it, if present conditions continue, has strengthened the Cut Nail market. Demand is somewhat on the increase. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....$2.00
Less than carload lots.....$2.05 to 2.10

*New York.*—The demand for Cut Nails continues in about former proportions. New York quotations for carload and less than carload lots are based on the above prices, to which Pittsburgh freight is added:

Carload lots on dock.....$2.13
Less than carload lots on dock..... 2.18
From store.....$2.18 to 2.25

*Chicago, by Telegraph.*—The demand for Cut Nails has so far shown no increase because of the apprehended scarcity of Wire Nails. The volume of business runs along about the same as for several months. Prices are unchanged at $2.35 for small lots.

*St. Louis, by Telegraph.*—Business in Cut Nails shows practically no change. Orders are small and prices unchanged. Small lots from store are quoted at $2.30 to $2.35.

*Pittsburgh.*—The tone of the Cut Nail market is stronger, due to the scarcity of steel and the higher prices being paid for it. There is still some cutting in price of Cut Nails, especially for mixed cars of Nails and Wire. A somewhat better demand is reported. Cut Nails are sold f.o.b. Pittsburgh, plus the Tube rate of freight. We quote as follows, f.o.b. Pittsburgh, plus Tube freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....$2.00
Less than carload lots.....$2.05 to 2.10

**Barb Wire.**—Mills are making more prompt shipments of Barb Wire, having in a measure caught up with their orders. Demand varies in different sections from fair to good, according to the requirements of the trade. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....$2.60
To jobbers in carload lots, Galvanized..... 2.90
To jobbers in less than carload lots, Painted..... 2.65
To jobbers in less than carload lots, Galvanized.... 2.95
To retailers in carload lots, Painted..... 2.70
To retailers in carload lots, Galvanized..... 3.00
To retailers in less than carload lots, Painted..... 2.80
To retailers in less than carload lots, Galvanized... 3.10

*Chicago, by Telegraph.*—The Barb Wire situation has not been improved by the closing of the Joliet Rod mills. Joliet is the leading point in the manufacture of Barb Wire. The mills were catching up with their orders to some extent, but the supply is now threatened with decided restriction. Jobbers are having a larger demand, as might be expected. Carload lots are quoted at $2.75 for Painted and $3.05 for Galvanized. Less than carloads are quoted at $2.85 and $3.15, respectively, with a shading of 5 cents to the best trade.

*St. Louis, by Telegraph.*—Mills have now commenced to catch up with their orders on Barb Wire and prompt shipments are being made in consequence. The demand continues heavy and mills have to keep their entire capacity employed to fill orders. Jobbers quote carload lots of Painted at $2.85 and Galvanized at $3.15; less than carload lots are quoted at $2.95 for Painted and $3.25 for Galvanized.

*Pittsburgh.*—Demand for Barb Wire is only fair and mills have caught up on back orders. There is some inquiry for Wire for fall shipment. There is no change in prices and we quote: Galvanized Barb Wire, $2.90, in carload lots to jobbers, and Painted, $2.60. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

**Plain Wire.**—Requirements for Plain Wire continue large, and mills are accumulating little stock. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

| | Base sizes. | |
|---|---|---|
| | Plain. | Galv. |
| To jobbers in carload lots..... | $2.25 | $2.65 |
| To jobbers in less than carload lots..... | 2.30 | 2.70 |
| To retailers in carload lots..... | 2.35 | 2.75 |
| To retailers in less than carload lots..... | 2.45 | 2.85 |

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 to 9..... | Base..... | | | | $0.40 | extra. |
| 10..... | $0.05 | advance | over | base..... | .40 | " |
| 11..... | .10 | " | " | " ..... | .40 | " |
| 12 and 12½.. | .15 | " | " | " ..... | .40 | " |
| 13..... | .25 | " | " | " ..... | .40 | " |
| 14..... | .35 | " | " | " ..... | .40 | " |
| 15..... | .45 | " | " | " ..... | .75 | " |
| 16..... | .55 | " | " | " ..... | .75 | " |
| 17..... | .70 | " | " | " ..... | 1.00 | " |
| 18..... | .85 | " | " | " ..... | 1.00 | " |

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

*Chicago, by Telegraph.*—Manufacturers and jobbers continue to report a strong demand for standard sizes of Plain Wire, with practically no stocks. Greater scarcity is threatened from the cause alluded to under the head of Wire Nails. Carload lots are quoted at $2.40, base,

and small lots from stock at $2.50, with $2.45 quoted to the best trade.

*Pittsburgh.*—There is a good demand for Plain Wire, and the output of the mills is shipped about as fast as made. For domestic trade we quote:

| | Plain. |
|---|---|
| To jobbers in carload lots | $2.25 |
| To jobbers in less than carload lots | 2.30 |
| To retailers in carload lots | 2.35 |
| To retailers in less than carload lots | 2.45 |

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

**Steel Goods.**—The annual meeting of the Steel Goods Association was held in Detroit last Thursday, with a large attendance of the manufacturers. One of the important questions before the meeting was the policy that should be pursued toward outside competition. After a full discussion it was decided that the association would not buy out such competition. No action was taken establishing prices, and this means practically a suspension of prices for the time being. The association, however, was not dissolved and adjourned to meet at the call of the chairman. In the brief time which has elapsed since the Detroit meeting there has been little opportunity to test the market, but some at least of the manufacturers are naming lower prices, and the market is regarded as somewhat unsettled.

**Wood Goods.**—While it is understood that the arrangement between the manufacturers of Wood Goods was not renewed at their meeting last week in Detroit, prices remain substantially as before. It is early as yet for the trade to place their orders for next season.

**Chain.**—The Chain market is characterized by a decidedly firm tone. This is the result of the large volume of current business and the condition of the iron market. Apprehension of a scarcity of material also contributes to the strength of this line.

**Cast Butts.**—An advance of 5 per cent. has recently been made by the leading manufacturers of Cast Iron Butts. It is understood that higher wages, which are being paid to molders, is one of the reasons for this action.

**Wrought Iron Pipe.**—The market for Wrought Iron Pipe is exceedingly firm, owing largely to the difficulty of obtaining a sufficient supply of goods. This is partly because of the very heavy demand which has for a long time been current, and the existing labor difficulties are, of course, interfering with production. Some of the jobbers in the East have fair stocks on hand, for which higher prices are demanded.

**Shovels and Spades.**—In view of the formation of the Ames Shovel & Tool Company, as announced in our last issue, the situation in Shovels is regarded with renewed interest. It is understood that negotiations are progressing with other manufacturers whose plants may be brought into the consolidation, but if so it is said it will be only at the actual value of the plants, and not at any fancy or inflated valuation. Meanwhile the association and its prices continue as before. What the outcome will be in this line, especially in view of the large and increasing competition of outside manufacturers, is one of the questions before the trade, who are purchasing cautiously and keeping down their stocks.

**Building Papers.**—A leading manufacturing company, whose most important field is Chicago, although they have depots in all the principal cities, are quoting the following prices to the trade, f.o.b. Chicago. Red Rosin Sized Sheathing, rolls of 500 square feet, three ply, rolls weighing about 20 pounds each, 30 cents per roll; 25-pound rolls, 38 cents; 30-pound rolls, 45 cents, and 35-pound rolls, 53 cents. Red Rope Roofing, 60-pound rolls, of 500 square feet, $2.75. Asbestos Building Felt, 3½ cents per pound, ton lots. Tarred Felts in light, medium and heavier weights, $1.25 per 100 pounds, and Slaters' Felt, 500 square feet, per roll, 50 cents. Deadening Felts, in which some changes have been made, are now $1.80 and $2 per 100 pounds, ranging from 1 to 1½ pounds per square yard, according to quality. Prepared Roofing Felt, two ply, per roll, 65 cents; three ply, 85 cents. The prices given above are for lots of 25 rolls, smaller quantities ranging from 5 to 10 cents per roll advance, while substantial concessions can be got for good round lots.

**Cordage.**—A wide range of prices remains a prominent feature in the Rope market. During the early part of July some of the manufacturers made a special effort to clear their warehouses preparatory to stock taking. Thus far this month the demand for all classes of Cordage has improved and those who are busy are not making concessions in prices to secure trade. The Manila Hemp situation is controlled by the parties who have been dominant for some time. The various grades of Manila Rope which are offered for sale are responsible to a large extent for the different quotations made, and Sisal Rope sympathizes in price with Manila Rope. Manila Rope, on the basis of 1-16-inch and larger, is quoted by some at 8½ to 8¾ cents per pound, according to quantity, while others will not accept orders at less than 9½ to 9¾ cents per pound. Sisal Rope is quoted, on the same basis, from 6½ to 6¾ cents and from 7¼ to 7½ cents by different manufacturers.

**Glass.**—Interest in Window Glass circles is centering about the possibility of the American Window Glass Company controlling the output of the Belgium Window Glass factories. While France and Germany manufacture Glass, the Belgium factories have been the largest importers of Glass to this country. The Window Glass factories in Belgium have recently been started after an eight months' strike. Reports differ as to the manner in which this country is to be relieved of foreign competition in Window Glass. One report is to the effect that the American Company is willing to control a portion or all of the combined Belgian factories, and under either arrangement to take a certain percentage of the output. Another report states that the American company are attempting to buy up all the available Window Glass. A paper devoted to Glass interests gives a list of Belgium Window Glass factories, and states that their combined productive capacity is 40 tank furnaces, of which 30 are in operation. If the control of the Belgium factories is secured by the American company, or if they succeed in having foreign Glass raised to higher prices than that of American Glass, the home market is likely to remain firm in the near future. The local Window Glass market remains quiet and prices unchanged. Jobbers' quotations for domestic Glass are as follows:

| | Discount. |
|---|---|
| Less than car lots, from store | 80 and 20 % |
| Carloads, f.o.b. factory | 85 and 5 % |

**Paints and Colors.**—*Leads.*—For local consumption the demand for White Lead in Oil is fair. No change in price has taken place contrary to the anticipations of some of the trade of lower values. It is understood that the recent advance in the price of Mixed Paints is not generally maintained, owing to the drop in the price in Oil, which occurred almost immediately after the advance in Paints was made. Quotations for White Lead in Oil are as follows: In lots of 500 pounds or over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound.

**Oils.**—*Linseed Oil.*—Immediate business in Linseed Oil is confined to small lots to cover requirements. Buyers of usually large quantities are purchasing what they require from day to day. The market is firm at 72 to 73 cents for City Raw, according to quantity. For Western Raw 71 cents is quoted for large quantities. For delivery during the last quarter of the year 55 to 60 cents for Western Raw is named. Bids of 50 cents per gallon have been refused.

**Spirits Turpentine.**—The local Turpentine market is quiet and demand is confined to small lots. Quotations, according to quantity, are as follows: Southerns, 36½ to 37 cents per gallon; machine made barrels, 37 to 37½ cents per gallon.

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Wheeler & Easum are successors to the Shelf Hardware and Stove business formerly conducted by Wheeler & Thompson, Clarendon, Texas.

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Keeling & Tuttle have succeeded M. Wiguni & Co., general Hardware merchants, West Brooklyn, Ill.

# Michigan Retail Hardware Dealers' Association.

## CONCLUDING REPORT.

WE conclude in this issue the report of the sixth annual convention of the Michigan Retail Hardware Dealers' Association, which was held at Detroit on the 14th and 15th inst. In our last issue we presented the annual report of Secretary Fred. H. Cozzens, and the very interesting and instructive papers read by R. J. Cleland on credits and collections and Henry C. Weber on store and window dressing and the best method of keeping stock in order. The president's annual address is given herewith.

### Tone of the Convention.

The Detroit gathering will be remembered by all who attended it as one both pleasant and profitable. Those in charge of the convention are to be congratulated on the success which characterized it. Only two important business sessions were held, and these were well attended and the proceedings were of such a character as to command the interest and attention of the members. There was adequate and reasonable recognition of the desirability of combining pleasure with work, and the outing which occurred Thursday was thoroughly enjoyed and contributed much to the success of the gathering. In connection with it one of the most interesting sessions of the convention was held. The membership of the association evinced an earnestness of purpose and an intelligence and a breadth of view which promise well for its future work.

### Co-operative Buying.

Mr. Lott of Chicago, secretary of the large and influential retailers' association of that city, on being called on for some remarks concerning what the association had done for its members, referred to its work in the way of co-operative buying. They have a buying committee who meet once a week, and when the time comes place orders for certain goods at a price as low as that paid by the jobbers. A good many goods are thus purchased, and this, he stated, was one of the things which kept the association awake and made it the success it is. He did not, however, think a State association could take care of the matter of buying. This work should be done through the medium of local associations.

### Garnishee Law.

One of the members referred to what had been accomplished in the changing of the garnishee law, and said that this action had more than justified the existence of the association. In his case it had resulted in saving at least $1000, which would otherwise have been lost. The modification of the law was effected largely through the protest and recommendation of the Hardware trade as represented at the last annual meeting of the association.

### The National Retail Hardware Dealers' Association.

An interesting address was made by Irving A. Sibley, South Bend, Ind., actively identified with the work of the National Retail Hardware Dealers' Association. Mr. Sibley referred to what had been accomplished in inducing prominent manufacturers to refuse to sell goods to catalogue houses or department stores, and expressed confidence that much could be accomplished in this direction.

Referring to the discussion in regard to jobbers selling to consumers Mr. Sibley pointed out that it is not possible for a dealer to buy goods from every jobber or manufacturer, and the fact that he does not do so is no justification for such jobber or manufacturer selling goods in the merchant's town. The fact that he does not buy from the wholesale house is not sufficient excuse for that house to go into his market or town and sell goods to the blacksmith or the lumberman. To prevent this is one of the things to be accomplished by the National Association. There is a good time coming, Mr. Sibley said, and the retail Hardware dealers of this country are slowly awakening to the fact that they have certain rights that should be respected.

They believe by the concentration of their needs through one channel they can get a hearing of the manufacturer and jobber, and by becoming united they will be able to have goods flow through the natural channel, and they have the assurances of the best jobbers and manufacturers in this country to that effect. It would be the happiest day they ever saw when that should come to be the case. There is not a jobber in this country that would not rather sell goods to the Hardwareman than to a man that does not know his business. All know how trying it is to have people come in who do not know what they want to buy. That same position exists so far as the jobbers' trade is concerned where they deal with the consumer. But until there is a strong effort made on the part of the retail trade, and a demand that they keep away from that class of people, that result will not be obtained, and this very feeling which causes people to attend the annual conventions is the feeling that will awake the retailers to this

HENRY C. MINNIE, President.

action. Two or three years ago when he tried to get men in South Bend to go to the State Association they looked upon it with complete indifference, but agitation in the trade journals has had its effect, and it is only a question of a couple of years when every city in the United States will contain members of the National Association.

In reply to an inquiry Mr. Sibley stated that the following ten States are now actively identified with the National Association: Indiana, Michigan, Illinois, Iowa, North Dakota, Kansas, Nebraska, Arkansas, Missouri and Kentucky. There is evidence also of support from other sources, 30 merchants in Pennsylvania, for example, signifying their desire to join the association, as well as some prominent Hardware merchants in New York City.

### Inventory Every Month.

In the paper read by Henry C. Weber of Detroit, which was given in our last issue, reference was made to his taking an inventory of goods every month. For the information of one of the members Mr. Weber stated that he did not take an inventory in detail every month. For instance, he took an inventory January 1,

extending prices. On February 1 he merely took an inventory of the amount of certain articles. He found this method very valuable in the matter of Stoves, Nails, &c.

### Dividing the Business Into Departments.

In reply to a question as to whether his own large business was divided into departments to the extent that each department accounted for itself, Mr. Weber, who had made some remarks on the general subject of departments in stores, said that he had not yet taken that step, but intimated that he would probably do so in time. In his establishment they use cash slips in each department, but as their salesmen move from one department to another, their operations not being limited to any one department, they use the nearest slip or ticket to send to the cashier. In a large store, he remarked, it took a good deal of time to go from one department to another; in his establishment a walk of 40 or 50 feet was sometimes necessary.

### A Diversion.

At the afternoon session on Wednesday President Hubbard pleasantly interrupted the routine proceedings by reading the following poem, entitled, "The Clerk's Refrain," which recently appeared in the Topeka *Merchant's Journal:*

If I had but an extra thousand plunks,
Or even five hundred, I ween,
I would hurry away to some cooling lake,
With its waters deep and green.

I would hurry away from this Hardware store,
Nor sell another Spoon;
I would hike away to a cooler spot,
And get there mighty soon.

I would let the invoices go to thunder,
And the flies through the windows roam;
I would fish and sleep through the summer heat
Till the chill nights drove me home.

I would live like an Indian high muck-a-muck
Till my face was covered with tan,
My appetite like that of a billie-goat,
Or a healthy hired man.

I would get away from this wearisome work,
And all this monotonous grind;
I would seek some spot where trade came not
To bother my hands or mind.

I would get away from the smell of the store,
And the loafers that loaf around;
I would list to the notes of the mocking bird,
And sleep out on the ground.

Oh, I would have a bully time,
If I had but a thousand plunks;
The fun I would have would be so thick
I could break it off in chunks.

But here I must stay and plug along,
While the hotness hotter grows,
And simply dream of the cooling lake,
Or the mountain covered with snows.

It's awful tough to swelter here
And think these yearning thunks,
Which one hasn't the chance to realize,
Because he hasn't the plunks.

## THE PRESIDENT'S ADDRESS.

The following was the annual address of President Hubbard:

I was absent when you held your 1900 annual convention and you took advantage of a man staying at home minding his own business, and made a crown for him. Don't ever make another for an absent member. You were evidently out of boys' sizes when you selected this one, for the misfit ornament has wabbled around and blown off a dozen times, at the expense of Secretary Cozzens' time and patience. However, he has adjusted it as well as he could and I am present now to wear the honor your generosity bestowed. Next year select a member present at this meeting and see that the crown fits the head.

I have seen Secretary Cozzens' report and it contains everything that has occurred in our history since the last annual meeting and relieves you of listening to the details at this time.

### The Future Hope

for the existence and usefulness of this organization depends upon our acts during this session and the impression those acts leave on the minds of our wavering brothers. We must warm up in our work now and each feel a personal responsibility in its success; become acquainted with each other quickly and throw into our brief two days' session the same zeal, industry and intelligence we practice in our daily home work. We must reach the boiling point by noon to-day and not draw the fires until the "Tashmoo" captain orders us ashore tomorrow evening. Sufficient opportunities for pleasure have been arranged for by our secretary and the official board to give us needed rest, but we have few enough working hours remaining in which to do the important work, and I ask your aid in expediting the same. Business men talk to the point always, and I know your "make up" well enough to know you can be relied upon to bring results out of this session which will convince the watchful eye of friend and foe that there is merit in our cause; that there is need in the retail Hardware

GEO. W. HUBBARD, Ex-President.

ranks for an organization of this kind, and this one is trying to place itself in line with the greater power—the National Association.

### Meeting New Conditions.

This organization is six years old and the secretary's report shows we have been losing and gaining members; the faint hearted are falling by the wayside, while the "Never say die," pugnacious members are still in the ring—but no "yellow streaks." It must be a success and will be when every Hardware merchant is properly scared by conditions created by labor and manufacturing combinations and consolidations which surround him. The only safe way out of the woods for us is to take hold of hands and not let go. When I say us I intend to be comprehensive and include every Hardware merchant in the United States. If we could go no further than to effect this State organization, I will confess to you now that I would be at the end of my hopes and ambitions in this direction, and assist you in a closing act in our history by singing the Doxology and pronouncing a benediction. We are one of the stones of a greater structure, the National Retail Hardware Association. The members of that organization are yourselves. You are honest, earnest, unselfish. We are facing new conditions, but not difficult to successfully meet and manage if we become a unit. The manufacturers and jobbers are not unfriendly to us; on the contrary, they are

friendly. They realize our value and want our business, but the

**Catalogue Houses and Department Stores**

are livelier fellows than we have been, and already put themselves in shape to do business broadly and for cash. We have been following old lines, while they have marked out new ones. The manufacturer and jobber want the customers who will make them the most money in the shortest time, so I suggest we consider improved methods at this meeting which will tend to make us more valuable to our manufacturing and jobbing friends, and naturally bring them over to our side, rather than adopt an aggressive course now or ever, unless compelled. We are the legitimate distributers of factory products. We do our business legitimately and on close margins, do as little baiting of the game into commercial traps as possible, and the people know it. All of them are not patronizing these great city department stores; some who did that have been cured. While we feel the stings of their competition, don't you believe those houses are not feeling our awakening, and the better we unite at this home gathering and put our cash and sympathy into the National the nearer we will get to the jobber and manufacturer and the better we will be hated by the piratical catalogue house and department and racket stores.

**How to Overcome Abuses.**

We must come out of our trance and organize as securely and work as intelligently as our competitors, and convince our jobbing and manufacturing friends we are worth more to them than are the other fellows. They, naturally, would rather have the legitimate trade, and we are recognized as that. Summed up, we represent both the numbers and capital, but through lack of organization are in business just as the farmer is in politics, votes galore but no good head. Help to find a Moses and, when found, loyally stand by him in sunshine and storm, with cash and counsel. If we gain ground, become a power, it will be when all the States unite on a simple, honest platform and adopt the motto "Justice."

**Futility of Paddling One's Own Canoe.**

The retail Hardware merchant who believes he can paddle his own canoe, just as he has always been doing or as his father did, will wake up to find the bottom ripped out of his boat by contact with a new variety of rock growing in the bed of the old stream. The retail merchant can convince himself that his environments are freshly picked and of a new variety by strolling through his stock in search of items not under control of trusts or combinations. I only refer to this because I am naturally mirthful and enjoy funny things presented in humorous ways, and the way our hands and feet are tied and then cross tied, and we are told to laugh and enjoy the situation, fills a man full of laughter who is hustling for bread and butter for his babies.

I would continue a first-class State organization, hustle to hold the old members and get new ones, get more cash into the treasury and demand more work from the secretary. There is no danger of getting too good a one. We need nearly all his time, his brain and his body. This State organization is especially fortunate in controlling a secretary who owns a press and a head for organization, but he, like ourselves, has other things to do.

**The Need of an Organizer.**

What I shall now say about the National possibly I should leave unsaid, but I am anxious to put the knife in until I touch the disease, and scraping the surface is a slow way of reaching the bone.

Elect for the organization the strongest organizer to be found; capitalize him and his plant so he can employ assistants for detail work and he be free to go from State meeting to State meeting, you advising with him about dates of the same, and do not have them conflict. Have him enthuse you by telling you what he has accomplished. Then, and not until then, can we answer our wavering brother's inquiry, "What has been accomplished by organization?" Had all this been said ten years ago it would have fallen on deaf ears. New stings by new competition have brought about this condition.

**In Time of Peace Prepare for War.**

What I have said to you would make an outsider say, "That man has lost his business; no man would take such a position in the midst of prosperity." The exact opposite is the true condition, not only with me but with you. More money has been made in our places of business during the last two years than any two years in the past 15 or 20, but we had the stock or contracts. Crops have been good, manufacturing and building increasing, and all have been booming satisfactorily, and I only ask you to pause as you do at the railroad crossing and read the danger sign and look both ways for trains. We have had a jolly ride to the crossing, now don't let ourselves be killed by carelessness.

In time of peace prepare for war. Our danger lies in the fact that we feel secure behind our temporary prosperity.

The suggestions I have made contemplate breadth of action and quite an outlay of thought and money. True, not much for each individual, but to be successful we must create a sentiment that will reach the intelligence of every Hardware dealer in this State, and I believe most of them are thinking the proposition over now, but don't know how to take hold of it, and because we have not accomplished great things during our brief existence have lost a measure of faith in us—not in our honesty of purpose, but in our ability to ever accomplish the ends sought.

**We Must Continue the Work**

along improved lines, tack with the wind when it changes. Since we began our association existence we have shifted sails several times and new pilots and new captains will have to do the same time and again in the future. The birth of the National has awakened a new interest, and when we convince the members of this State association that our existence means the National existence, and convince them what a power that organization can wield when wisely directed, we shall not lack in numbers or interest. Organization and concentration are the twin words written on every form of commercial battle flag. Place in office level headed leaders who know the value of "still hunt" methods, and who have that nice sense of justice they will not expect nor demand from manufacturer or jobber a thing that is not broadly fair.

**Two Bits of Literature.**

I do not feel like disturbing the usual literary inclinations of the Hardware fraternity and ask them to totally cease reading religious works and the family Bible, but do call their attention to two bits of literature, one dated March 1, 1901, and one dated June 1, 1901, and issued at Argos, Ind., by a distributer of truths. Gems of succulent nature can be found therein which will nourish your discouragement and force you to believe the doctrines taught are good for the body as well as the soul. Our theologians revised the Bible when intelligence dictated the necessity, and Elder Corey and his cohorts are simply rearranging your business creed.

**Relations with the Jobbers.**

The National Association of Jobbers are men accustomed to large ideas, large expenses, large disbursements and large results. They capitalized their association $15,000 before they considered themselves ready for business. We have just as heavy machinery to move and it must move with as much speed. I believe it has more wheels, consequently more friction. Arm and equip our fighters with plenty of patience and powder.

I will conclude by reference to our relations to the jobbers' association. Your committee has met theirs, the jobbers have studied trade conditions better than we have and they are closer to the manufacturer than we can hope to get. They realize our business is more or less demoralized and they know why it is so, for they are frequently in contact with the same competition and know the difficulties of the situation, but they are willing

to be our allies in fighting the common enemy. And I hope, in your deliberations, you will consider we have no better friends nor those who will be found more loyal than they. They were unexpectedly frank and freely and satisfactorily answered all inquiries we were intelligent enough to ask, and seemed entirely willing to do so.

We are now fairly open for business and I want a free exchange of ideas and want every member to take an interest in this session and help reap profits by making business more pleasant and profitable.

## QUESTION BOX.

The Question Box was a feature of the convention. Among the matters which were considered were the following:

*I. What is the best way to get along with unscrupulous competitors?*

A DELEGATE: Get them into the association.

*II. How many of you make any effort to meet catalogue house competition by distributing letters and circulars?*

MR. PIPP: I take their catalogue and read it first. Then I get out printed matter relating to different lines and mail it and hand it out every day in the year. Since I adopted this method people who formerly sent their money to catalogue houses come in and see me before ordering, and I generally get their orders. I have kept this up for a year and over, and it is now paying me, I think, 20 per cent. more than a year ago. Many orders go to these catalogue houses because people don't think you have the goods or can meet their price. I do not think there is a house represented here that cannot meet the price.

Mr. Nicholson said that he had had some experience as agent for one of the express companies and knew what goods were brought into his town by express through catalogue houses. He told of several cases where purchases of Bicycles and Sewing Machines had proved very unsatisfactory to parties in the town. The goods were defective or damaged in transit, and in setting the matter right a good deal of annoyance was encountered.

*III. Does the manufacturer or jobber sell the consumer in your territory and what ought we to do with such a jobber who sells our customers?*

MR. HARSHAW: I am from Delray, a suburb of Detroit. I have run up against several jobbing houses who sell to consumers since locating in Delray, and I do not know how to remedy this unless by reporting it to the Hardware Dealers' Association of Michigan. If the Hardware dealers of Michigan will agree not to patronize such houses if they insist upon selling the consumer I think that would stop it. I have reported one or two to the secretary. One house has practiced it right along, and recently put in a bid to furnish a new school house in my town, where I am a taxpayer. They put in a bid for that school and a bank building next to my store.

MR. WEBER: I might say in answer to Mr. Harshaw that there are other jobbing houses who do the same thing. I believe they all do it. It is one of the unfortunate things about the Hardware business in Detroit. It has been put in a condition where the retail dealers do not care to handle Builders' Hardware because there is no money in it. I believe the concern you speak of had a man out selling Builders' Hardware, and he has sold more Builders' Hardware than any other man, but they never made a cent out of it. I will say for this concern, having dealt with them for 16 years, that they are one of the most liberal houses in the city. We have felt that we could do as well by them as any other house, and I do not think the organization should single out one particular house. I believe if a committee of Hardware people would visit this institution, or any other for that matter, and request them to stop selling to consumers, they would do so. But if they don't do it there are other houses who would come in from outside the city and solicit the contracts. The Hardware dealers of the city took it in hand and we found it a detriment to our business, and I have almost given up entirely the sale of Builders' Hardware, as far as figuring with the contractors is concerned. If a man comes in and wants a bill of Hardware we can figure on it, and I think if you would go to these houses and say you are figuring on a certain job they would give you their figures, and even raise their figures to help you make a profit on it. They all do it. Every one of them will take a contract if they can, but if any retail Hardwareman goes to them who is a customer of theirs I think they will help him. I do not want to censure this particular house when all are doing the same thing. If they all felt we objected to it, and we made objections to it, I think they would give it up.

MR. HARSHAW: I do not mean to single out one concern. It is the only house I happened to run up against in my experience and business here, and if others do the same thing I think we should take some action against all of them.

THE PRESIDENT: Are we to understand that the jobber is sending his man out to individuals or to contractors and soliciting that business in a sort of retail way?

MR. WEBER: It is mostly on large buildings. The architect specifies certain Hardware; they have their plans in which they have mentioned certain Hardware and different men go into the architect's office and figure on the plans; but if another Hardwareman is figuring on it they will protect not only one but two or three by putting in a larger figure so that the Hardwareman can get the contract. I have tried them and found that they would do it.

D. C. DE CLEMENTS: How is it with small houses where the architects have nothing to do with the Hardware?

MR. WEBER: I am glad this matter was brought up. I am not here representing the wholesalers, but I answered in the manner I did because only one firm was mentioned, and it would be unfair to take one and leave the others out. We have four jobbers in Detroit, and I think that they will help us in every way, shape and manner. Answering Mr. De Clements, I think the jobbers may be guilty of doing that; but I did not know of it. The way to overcome the difficulty is to lay our grievances before the jobbers, and I feel sure they will be glad to meet us. I feel that the wholesale Hardwaremen would be glad to confer with us on the subject.

### A Day's Outing.

On Thursday the delegates enjoyed an excursion to the St. Clair Flats on the steamer "Tashmoo." They left the city early in the morning, and arriving at the Star Island House at noon, sat down to dinner. After dinner an executive session of the association was held, at which an address was made by I. A. Sibley, South Bend, Ind., a member of the Executive Committee of the National Association, and a paper read by Henry C. Weber of Detroit on the subject of "Store and Window Dressing, and the Best Method of Keeping Stock in Order." This paper was presented in our last issue. After supper at the Star Island House the return trip to Detroit was made. The outing was a success in all respects, and was thoroughly enjoyed by the members of the association and their guests.

### Honorary Members.

A resolution was adopted admitting to honorary membership in the association traveling men and representatives of the trade press, without dues. This class of membership will not, however, be admitted to executive sessions, or have a right to vote. It was also determined that hereafter papers prepared by the members will be read at open sessions.

### Convention Committees.

The following committees were appointed by President Hubbard:

COMMITTEE ON CREDENTIALS: O. H. Gale, Albion, chairman; Burton Nye, New Haven; J. G. Pattison, Detroit.

COMMITTEE ON RESOLUTIONS: Chas. F. Bock, Battle Creek, chairman; A. Harshaw, Delray; Geo. J. Phillips, Allegan.

COMMITTEE ON CONSTITUTION AND BY-LAWS: Henry C. Weber, Detroit, chairman; G. R. Bruske, Saginaw; C. E. Pipp, Otsego.

QUESTION BOX: Arthur J. Scott, Marine City, chairman; E. H. McGowan, West Branch; L. B. Brockett, Battle Creek.

### Election of Officers.

The Committee on Nominations recommended the election of the following officers for the coming year, and they were unanimously chosen:

PRESIDENT, Henry C. Minnie, Eaton Rapids.
VICE-PRESIDENT, G. W. Bruske, Saginaw.
SECRETARY, Fred. H. Cozzens, Detroit.
TREASURER, Henry C. Weber, Detroit.
EXECUTIVE COMMITTEE FOR TWO YEARS: Samuel Winchester, Jackson; Fred. J. Cook, Fowlerville; C. E. Pipp, Otsego; A. Harshaw, Delray; A. J. Scott, Marine City.

### Again at Detroit.

Mr. Bock of Battle Creek made an eloquent appeal for the selection of that city as the scene of the next convention, but Detroit was the choice of the majority and was again chosen.

# NOTES ON FOREIGN TRADE.

## BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, NORFOLK STREET, LONDON, W. C.

### Concentrate Your Freights.

A STRIKING proof of my contention, many times advanced in these columns, of the importance of associated effort in reducing Atlantic freights, comes in the report of the Manchester Ship Canal, which lies before me. The authorities are doing all they can to cultivate American trade. The chairman at the half-yearly meeting remarked that the main hope at the present time was in an extension of business in American produce. Their chief traffic superintendent was going to America for the purpose of visiting various firms with whom correspondence had been opened up. His first object would be to see the people who were already doing business with Manchester, so as to encourage traders to fill the ships, and if possible to induce the owners to put more ships on the line. The other object was to see whether he could not, in conjunction with the American railway men and others, arrange for the establishment of new lines to Manchester. How far the great changes that were taking place in railway control and steamer control in America would postpone success in that effort was a matter upon which it was difficult to express an opinion. Meantime, I see that the Manchester Ship Canal Company complain of scarcity of cargoes. It is stated that the depression at American ports is still as acute as ever. The "Planet Neptune," a new steamer launched on the Clyde, arrived at Philadelphia to commence a line to Manchester. This I have already reported. But it is now stated that she had great difficulty in procuring a cargo, which was filled at low rates, and is now on the Atlantic. The agents of the steamer and the railway company telegraphed a short time ago advising that the next boat should not be sent out, as arranged. The scarcity of cargo also extended to Canada. In face of these facts could not some association of American exporters drive a good co-operative bargain in the way of freights?

### Canada and South Africa.

With reference to the above statement that it is difficult to get cargoes from Canada to Manchester, it may be of interest to know that the Special Commissioner to South Africa sent out by the Dominion Government for the purpose of reporting upon the prospects of trade in South Africa has now made his report. I would recommend New York exporters to obtain a copy of it. The commissioner goes very thoroughly into the best means of introducing into South Africa goods direct from Canada without either New York or London being required to play the part of mercantile half way house. He further advises that a number of special traveling agents should be sent to the Cape, whose duty it should be to stimulate the desire already existent for Canadian goods. It is authoritatively stated that Sir Wilfred Laurier approves of the idea and that there is every prospect of its being adopted.

### Trade in Germany.

The Hardware trade in Germany is in a depressed state, but there are some points of interest showing developments which American exporters should carefully observe. For example, there seems a big future for the Incandescent Intensive Gas Lamp, called the Lucas light, which has been placed on the market by the Deutsche Beleuchtungs und Heiz Industrie Aktien Gesellschaft in Berlin. An official computation gives the result of an illuminating power of 500 to 600 Hefner units, about as much as a large electric arc lamp of 8 amperes, while the cost of producing and working the Lucas light is about one-third of that of an electric arc lamp of the same illuminating power. Gas light of even approximate illuminating power can only be otherwise obtained by the expense of a troublesome production of hydro compressed gas, which requires a motor and special pipes for its production, while the Lucas light can be attached to an ordinary chandelier. The gas department of the Berlin Town Council is trying the experiment of lighting one part of the Friedrichstrasse (one of the principal Berlin thoroughfares) with 20 of these lamps.

### The German Cycle Trade.

The decline of the German Cycle industry still continues, a number of firms engaged in this industry having now declared themselves insolvent. Others have diverted their works into making other goods. During the last two years there has been a decrease of 50 per cent. in the Cycle trade. It naturally follows that the trade in Cycle Saddles and Apparatus has decreased in proportion, while overproduction and increased competition have reduced prices. Thus, there is a large import of foreign Cycles into Germany, the duty on such machines being only 2.50 marks.

### Calcium Carbide in Germany.

The calcium carbide industry in Germany is suffering from overproduction. Prices have steadily decreased, so that all the factories in Austria-Hungary, Italy, Switzerland, Scandinavia and Germany are obliged to stop working. The production has amounted to 50,000 tons, of which only 12,000 to 13,000 tons are required for the production of acetylene. A few firms who have binding contracts to deliver calcium carbide are the only ones working. These are the works of the Aluminum Industrie Gesellschaft in Newhausen, Switzerland, who have a two years' contract with the Prussian Government, who require calcium carbide for producing acetylene gas for the illumination of railway carriages. It is stated that a number of accidents have lately occurred which tend naturally to hinder the development of acetylene gas.

### Counteracting German Prejudice.

I have received the first number of *Columbia*, which has been started by Joseph Brucker, the managing editor of the *Illinois Staatszeitung*. It will be within the recollection of some of your readers that some time ago pressure was brought to bear upon various German Bicycle publications to refuse all American advertisements, and this restriction is still maintained by several of the journals in question. In addition, there is distinctly a European movement aiming to exclude American products on the general ground that American commerce is now the enemy of Europe. Joseph Brucker has started *Columbia*, which is printed in Berlin and written in German, with the view of counteracting as far as possible these unhappy tendencies. He proposes, first, to open headquarters in the city of Berlin and to publish *Columbia*, which is avowedly a trade paper, and which he hopes will be patronized by advertisers both in Germany and America. Secondly, he will establish a bureau of information. In that bureau catalogues, price-lists, drawings of machinery, models and samples will be shown, and information given to those desirous of establishing trade relations with American manufacturers and merchants. Third, he will watch closely such political events as may lead to any change in the trade relations with the two countries. He will write for the principal papers in Germany articles which he deems necessary to correct any erroneous impressions or to repulse the attacks of narrow minded and selfish interests. Fourth, by personal acquaintance with influential people in Government and Parliamentary circles and the leading bankers, manufacturers and merchants, Joseph Brucker hopes to accomplish much. Fifth, he proposes to maintain constant com-

munication with those American firms who interest themselves in the enterprise. Lastly, he proposes to lecture in Germany on such American subjects as will benefit American interests, and also on typical American institutions, cities and manufacturing centers. The first number runs to 48 pages, is excellently printed, carries 13 pages of advertisements, mostly American, and should do something toward facilitating trade between America and Germany. It may perhaps be mentioned that the United States buy from Germany about $100,000,000 worth per year. I see that, according to the Commerce and Navigation Report of the United States for the year ending June 30, 1900, America exported to Germany $187,347,889 worth.

### Builders' Hardware in Australia.

Exporters of American Builders' Hardware will be glad to know that extensive building operations are now taking place in the district of Toowomba in Queensland. Contractors, however, experience great difficulty in obtaining an adequate supply of bricks. Among the buildings in progress are large refreshment rooms, an auction mart, two hotels, a bank, a convent, a Wesleyan chapel, in addition to numerous stores and dwelling houses. In Sydney the iron workers have struck for a minimum and uniform wage of 7 shillings per day, an advance of 1 shilling on the old rate. The employers have offered to concede the advance to good and competent workmen, but object on principle to a uniform wage to good and bad workmen alike. There has also been a strike among the dockers and shipwrights on the employment of nonunion labor, which has added a further 1000 to the original number of men on strike. At Melbourne an important increase has been made in the dock accommodation, a new dock 490 feet long and of sufficient width to dock vessels up to 65 feet beam being now completed. All these events should stimulate trade between America and Australia.

### Firearms.

Some time in 1902 the Greek Government will place extensive orders for Small Arms and Ammunition. A sum equal to about $5,500,000 is to be provided for this purpose, together with any money realized by the disposal of a large stock of obsolete material which has been accumulated in past years. This looks like a very pretty contract which is worth going for. As Arm and Ammunition manufacturers in Birmingham, Liége and Germany are all just now exceptionally busy, it seems an appropriate opportunity for some energetic American house to weigh in and get the contract, or part of it.

### The Master Cutler.

His New York friends will be glad to congratulate Arthur Robert Ellin, senior partner in the firm of Thomas Ellin & Co., Cutlery manufacturers, of Sylvester Works, Sheffield, upon being appointed Master Cutler for the ensuing year. Many another Master Cutler has done a big trade in Cutlery with America, but those glorious days seem to be receding into the past.

## AUSTRALIAN LETTER.

FROM A SPECIAL CORRESPONDENT.

AMERICAN TRADE AND PROSPECTS.—To sit down now and chronicle trade news of a special character likely to acutely interest American merchants would be like attempting to discover snakes in Ireland. Merchants here are awaiting tariff developments in every branch of trade, and what with this and the usual half yearly stock taking, business is slack indeed.

Recently published figures show that American exports to this country are steadily increasing, and Australia generally is now taking very much to the consideration of the probable future of America in regard to its commercial supremacy in these markets.

It is certainly very curious to note the developments of the past few years. In finance New York, by floating various foreign loans which for generations have been placed in London as a matter of course, now appears to be rivaling the latter as the financial center of the world, and is at present tempting these colonies (or at any rate New South Wales) to place future business there.

In manufacture the output of America is annually increasing in far greater ratio per capita than the output of Britain. In shipping the cables have just brought us tidings of the purchase bodily of a huge English shipping concern (Leylands) by American capitalists.

The commercial supremacy of the sea is perhaps the greatest factor in the commercial supremacy of the world, and the feverish energy of your people and the capital available in America are causing the curious ones out here to wonder how much further you intend to go.

We do not question that our own country, England, is progressing, but we do begin to wonder if it is making the same amount of progress as its energetic cousin across the "herring pond."

Flint-Eddy's circular of May 24 quotes your exports to this country for the year ending June 30, 1900, as follows: "Wire, 29,000 tons; pig iron, 6000 tons; steel rails, 20,000 tons; steel sheets and plates, 17,000 tons; castings, $50,000; electrical machinery, $200,000; boilers, $100,000; machinery not specified, $1,400,000," and so on. Those figures represent the lion's share of the Australian trade, and the cheerful assertion contained in the circular that shipments for 1901 will be considerably larger in all lines sets us wondering and forms the cause and basis of these remarks.

FIRE IN SYDNEY.—Anthony Hordern & Sons' establishment, doing the largest retail business south of the line in almost every branch of trade, Hardware included, was burned out July 10. The damage is estimated at a million sterling, less than half covered by insurance. The firm's reserve stock of goods (they have been stocking heavily in anticipation of protective duties under the Commonwealth) was valued at £1,250,000. They employed some 1500 hands in their establishments and nearly twice that number were indirectly employed by them outside. The firm lost no time in leasing the Exhibition Building to continue their business pending reconstruction of their former premises.

THE WILL of the late Edward Keep, one of Melbourne's pioneer Hardware merchants, who died in May last, was recently proved at £245,000.

AGRICULTURAL CHEMICALS AND FERTILIZERS.—This is a growing trade between your country and Australia, several cargoes of Florida phosphate rock having come to Australia of late. Latest quotations for ordinary "jubble" are about 21 to 23 shillings per American ton, f.o.b Fernandina. Apart from other considerations, the development of this (and other) trades means increased productiveness and will also act as a check on the freight market.

## AMES SHOVEL & TOOL COMPANY.

As announced in our last issue, a consolidation of the principal Shovel manufacturers was effected on the 10th inst. under the name of the Ames Shovel & Tool Company, with a capital of $5,000,000, consisting of $3,000,000 preferred and $2,000,000 common shares. The promoter was John H. Parks of Boston and New York, widely known as a successful organizer of numerous industrial consolidations. Mr. Parks organized the Cotton Duck Trust and was associated with John W. Gates in promoting the American Steel & Wire Company. The Ames Shovel & Tool Company are really a merger of the Oliver Ames & Sons Corporation, North Easton, Mass.; T. Rowland's Sons, Philadelphia; Wright Shovel Company, Anderson, Ind.; H. M. Myers Company, Beaver Falls, Pa., and the St. Louis Shovel Company of St. Louis, Mo. The Oliver Ames & Sons Corporation, who form the nucleus of the combine, are the largest Shovel works in the world and were the first to manufacture Shovels by machinery. They were formed by Oakes Ames, who superintended a large part of the construction of the Union Pacific Railroad. The Ames Works employ over 1000 men, and each of the other component companies employ several hundred men. The charter of the new company authorizes them to manufacture Agricultural, Farming and Garden Tools, Shovels and

kindred articles. It is thought the new company will take in manufacturers in these other lines as well as Shovels.

## NATIONAL HARDWARE ASSOCIATION.

JOHN BINDLEY of Pittsburgh has resigned the presidency of the National Hardware Association and has been succeeded by the first vice-president of the association, Richard W. Shapleigh of St. Louis. Mr. Bindley was obliged to take this step owing to the pressure of private business matters in which he had lately become interested. He had already announced his intention to decline to allow his name to be used at the next election, and he further realized that the interests of the association would not suffer, particularly in view of the fact that Mr. Shapleigh had consented to act as president until the approaching convention in October. Mr. Bindley had nearly completed two terms as president of the association and is recognized as having administered its affairs with rare sagacity and skill. He will be a member of the advisory board, so that his active interest in the association will not be abated.

Mr. Shapleigh, the new president, is well known to the trade throughout the country from his prominent connection for many years with the A. F. Shapleigh Hardware Company, and the association is to be congratulated on securing the services of one so admirably qualified for the position. In an interview with our St. Louis representative, who assured Mr. Shapleigh that *The Iron Age* would be glad to announce his policy as president, he said:

"I have no definite policy to announce. The same broad, conservative and practical methods will prevail. No one who has been an understudy to such men as Messrs. Supplee, Bishop and Bindley could possibly have any other policy.

"Mr. Bindley is still an advisory director, and we can all feel thankful that his wise counsel will still be at our service. I feel the most sincere regret that Mr. Bindley's private enterprises made it necessary for him to resign, as I feel my inability to worthily wear his mantle.

"We look forward with great interest to the convention in October, and are certain to have a very successful and enthusiastic one. The president of the National Hardware Association has always had the cordial and unanimous support of all its members, and I am sure that this will be accorded me."

Elaborate preparations are being made for the approaching convention at Cleveland. Immediately after the convention adjourns the delegates will visit the Pan-American Exposition at Buffalo. Arrangements will be made for their accommodation in one or two hotels near the exposition grounds.

## REQUEST FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

On August 6 the handsome new building of E. O. Hall & Son, Hardware merchants, Honolulu, H. I., was destroyed by fire, nothing being left but the side walls and vaults. The loss is fully covered by insurance. Only their retail department was affected by the fire, the wholesale business being carried on from their warehouse, which, fortunately, escaped destruction. Preparations are already under way for the erection of a larger building to replace the one consumed, and the firm purpose ordering a new and complete stock immediately. Their large collection of catalogues, price-lists, &c., having been destroyed, they will be pleased to have manufacturers forward copies of their latest printed matter.

ORVILLE EWING, Houston, Texas, advises us that the report which has obtained considerable circulation that he had organized a new company to buy out the J. S. Dunlay Hardware Company of that city is without verification, as the project has not been carried through. The matter is now being considered in court.

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## C. E. JENNINGS & CO.'S NEW CATALOGUE.

C. E. JENNINGS & CO., 101 Reade street, New York, have just issued a new catalogue of fine Mechanics' Tools and Hardware Specialties, including such leading goods as Saws, Chisels, Augers, Bits, &c., made at their own factories in Yalesville, Conn.; Hinsdale, N. H., and Port Jervis, N. Y. Some of the more important additions are a new line of Hand Saws, Nos. 12½, 212 and A 7½ on page 67, a group of new Chisel sets on page 42, Short Ring Augers, black lip, No. 43, on page 28, and several combinations of Braces and Bits, complete in boxes, on page 12, there being four different grades of Bits. On page 98 and 99 are Band Saws and Power Hack Saws for cutting metals, which show improvements, and on page 101 is a new pattern of Adjustable Level.

## F. E. MYERS & BRO.'S PICNIC.

F. E. MYERS & BRO., the well-known manufacturers of Pumps and Hay Tools, Ashland, Ohio, tendered their employees a picnic on the 10th inst. It was the first affair of the kind given by the company, and in view of the pleasure and enjoyment which characterized it, it will doubtless be an annual fixture hereafter. The picnic was held at Chippewa Lake, 17 cars being used to transport the employees and their wives or sweethearts. The company's employees number nearly 400, and altogether about 1000 persons enjoyed the lavish hospitality of the firm.

## PRICE-LISTS, CIRCULARS, &c.

MASSACHUSETTS TOOL COMPANY, Greenfield, Mass.: Circular entitled "Some New Micrometers," illustrating instruments, the accuracy of which is guaranteed.

SHUBERT & COTTINGHAM, Philadelphia: An illustrated catalogue and price-list of more than 100 pages has just been issued covering their manufactures in Tackle Blocks, Sheaves, Bushings, &c., and also Manila and Wire Rope and Marine Hardware, in which they deal. They state that they have added a large variety of new articles not shown in previous editions.

ILLINOIS ROOFING & SUPPLY COMPANY, 23 Lake street, Chicago: Illustrated catalogue and price-list of nearly 300 pages devoted to Roofers', Tinners' and Cornice Makers' Supplies. The company call attention to the completeness of the line thus shown.

THE A. J. HARWI HARDWARE COMPANY, Atchison, Kan.: Fall and winter catalogue, 80 pages, showing Axes, Stoves, Cider Mills, Husking Goods, &c.

BUHL STAMPING COMPANY, Detroit, Mich.: Catalogue No. 42, illustrating their line of Buhl Sanitary Milk Cans and Can Stock.

## TRADE ITEMS.

STANDARD ROLLER BEARING COMPANY, Philadelphia, Pa., have purchased the entire Axle business for wagons, carriages and automobiles of the Ball Bearing Company, Boston, Mass., and orders for these goods should hereafter be sent to them.

AFTER a service of nearly 12 years with the American Axe & Tool Company, F. E. Corey, Lakewood, Ohio, has become connected with the International Metal Lath Company, Niles, Ohio, as secretary and manager. This company were organized about a year and a half ago and are manufacturers of Herringbone Expanded Steel products.

THE new factory of the T. C. Prouty Company, who have removed from Midland to Albion, Mich., will be fully equipped with modern appliances for the production of Door Hangers. The plant will be furnished with electric power, and all machinery will be run by direct connected motors. The company expect to have their new plant in full operation in time to take care of their fall trade.

CENTURY POST & FENCE COMPANY, who have been located at Pendleton, Ind., have been bought out by Lafayette, Ind., parties, W. W. Alder, wholesale grain dealer and president of the Commercial Club, being elected president; William Atchison, vice-president; R. L. Campbell, secretary and treasurer, and R. C. Glassco, who is the patentee of the Posts, superintendent. The company will continue with materially enlarged capacity to manufacture Galvanized Steel Farm and Railroad Posts, Hitching and Mail Box and Special Steel Posts, as well as Lawn, Park, Cemetery and other Fencing.

# SHOW WINDOW DISPLAY.

*The trade are invited to contribute information in regard to methods which have proved satisfactory, with descriptions of attractive displays. Inquiries also are solicited, to which careful attention will be given.*

## THE RED MAN.

During a recent celebration of the Red Men at Laredo, Texas, the Red Man whose picture is printed herewith kept guard in the window of Deutz Bros. This display was the handiwork of Wm. H. Curry, to whose lot falls the window trimming.

The head of the Indian was formed of a large White Pitcher, the ears and the nose of plaster paris, the shoulders of a Steak Plate, and the neck of a scalloped Bowl. A large Feather Duster with daubs of Paint on some front feathers was stuck into the Pitcher as a head dress. The face, &c., were decorated with Yellow Ocher, Ultramarine Blue and Vermilion. To form the body a shelf was put on a bracket fastened to the back wall of the window, and this shelf formed the support for shoulders and head. For the chest and body a large knitted Game Bag was tacked over the edge of the shelf. The legs

*The Red Man.*

were formed of two Leather Carbine Scabbards, the feet of heavy water proof Hunting Shoes. Hunting Leggings were put on and, coming up the legs, covered the part where Scabbards were put in the Shoes. The arms were formed of Leather Pistol Scabbards stuck into each other and fastened together by strings in the back of same, and also fastened to the shelf for support. The fingers were Clothes Pins stuck to the Scabbards, with an empty Paper Shell stuck on each. A loaded Cartridge Belt, fastened around the waist and supported from the back, held a Revolver in a Scabbard, a Bowie Knife and an Ice Hatchet that served as a tomahawk. A Winchester Carbine rested against a box beside the figure, and the floor was covered with sand. In the very front of the window the name of the firm was formed of Cartridges placed in the sand. Drapery and flags were used for decorations. All the goods shown were from stock, including the Flags, which are handled in this store.

In the absence of a Pitcher a stone mason's Mallet

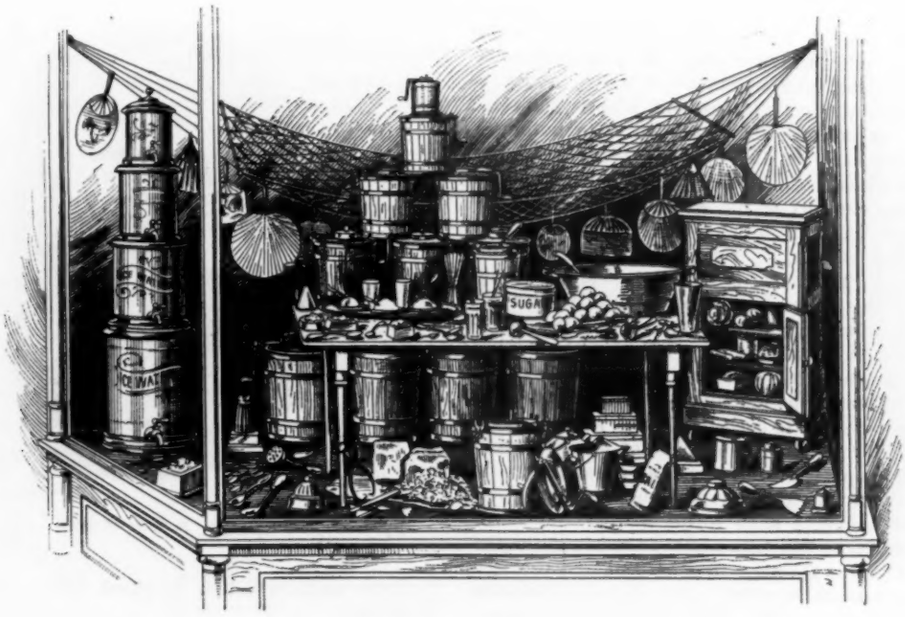
set on Tin Pans could be decorated and made to form a good likeness of an Indian.

This display attracted very marked attention, which is the general result where grotesque displays are made from store goods, and many a laugh was had at the Red Man.

## A "KEEP COOL" WINDOW.

BY INSPIRATION.

When the recent hot spell made physical effort of any character almost unbearable it was fortunate that mental activity could be indulged in while seeking such comfort as could be found in absolute quietude. It has been my custom to endeavor to turn whatever caused me inconvenience, annoyance or discomfort to profit whenever possible. So when a desire for relief from the intense heat suggested to my mind many things that would make life more pleasant, even if the scorch continued, I concluded that these suggestions should materialize in the form of a "keep cool" window, which would bring me customers, profit and popularity in suggesting a means by which other people might find relief from the heat.




*A "Keep Cool" Window.*

After the cool of the evening set in I told two of the clerks that I would stand for all the ice cream they could eat if they would aid me in preparing an attack on the pocketbooks of my customers by helping to erect the fortifications. One was set to removing everything that had been in one of my show windows, while with the other I selected the materials for my display. I decided that in one corner, at the back, I would have a pyramid of Water Coolers of different sizes, and in the opposite corner I would have a Refrigerator with the lower door open, showing some lettuce, cucumbers, lemons, raspberries and other things that would be inviting to the appetite during a hot spell. For a background I had a pyramid of Ice Cream Freezers, the bottom row being composed of large Freezers, smaller ones being used for the top. A little 1-pint Freezer, suitable for use in making ice cream at the tea table, was at the very top. Across the window, above the pyramid, I had a Mexican Grass Hammock, light blue in color. From the Hammock I hung a variety of fans, from the large sized palm leaf "Sabbath Day Cooler" to the grotesque Japanese spread and folded fans. I placed near the center of the window a big "take me home for 98 cents" Folding Leg Dressmaker's Table. On this I placed a large Bright Dish Pan, and suggestively alongside of it a pile of lemons, Lemon Squeezers, Knife for cutting the lemons, Ice Pick, Cork Screws, several two-story Tumblers, a Tin Shaker, such as is used for mixing cool drinks, and a bundle of Straws.

In one glass I had red lemonade with a slice of lemon floating in it, and two straws sticking invitingly out of the top. In another I had orangeade with some raspberries floating in it. In another was lemonade with a slice of orange and a couple of strawberries in it, and near at hand was a big box of sugar. On the other end of the table I had a large japanned Tin Waiter on which were arranged several saucers with Tin Spoons, alongside of which was a bundle of cheap Tin Teaspoons wrapped in blue tissue paper, suitable for picnic parties. Beside this waiter was an Ice Cream Freezer with the top and crank taken off, and conveniently at hand was one of those Funnel Shaped Ice Cream Measures. Several big Tin Spoons, suitable for dipping out the ice cream, and one of the new Wrought Iron, Tinned, with Wooden Handle Ice Cream Scoops. To carry the illusion further I had a bright young mason to ladle me out some "white coat" on the saucers in such a manner that it looked very much like hard ice cream. There was ample space on the table for several styles of Ice Picks, Individual Ice Cream Molds, also larger Forms, such as are used for gelatine and puddings. Sticking out of the lemonade pail was the bent handle of a Tin Dipper, and on the table beside it was a Dipper of another style, also a very handsome Britannia Dipper with an ebony handle.

In front of the table, where it could readily be seen, was an Ice Cream Freezer with the crank taken off and all ready for receiving a batch of material to be frozen. On a piece of rough burlap was a big chunk of glass and several smaller pieces, which I was able to collect, to resemble ice; and conveniently at hand I put a pair of Ice Tongs, an Ice Pick, Ice Hatchet, two different styles of Ice Shavers, Chippers and an Ice Maul, then a small bag of coarse salt, with some Ice Cream Molds, Milk Pails and other suggestive Tinware.

When we had got thoroughly into the spirit of arranging this "keep cool" window the boys showed considerable interest and put in a number of other little things that had escaped my mind, as Coarse Graters and Nutmeg Graters. One thought that we ought to have a pineapple to suggest pineapple water ice, and when the work was completed the best compliment we received was from a stout old gentleman, who stopped to look at it, and said it had entirely changed his feeling. Instead of feeling hot he felt for his pocketbook to see whether he had money to buy an Ice Cream Freezer and some of the lemonade and paraphernalia we had shown.—*The Metal Worker.*

## THE STOWELL MFG. & FOUNDRY COMPANY.

THE plant of the Stowell Mfg. & Foundry Company, located at South Milwaukee, Wis., has grown to be an important factor in supplying some of the requirements of the Hardware trade. The business of this plant has been greatly increased since it entered into the possession of the present owners, which was in 1896. It was founded by the Moore Mfg. & Foundry Company. Since then the works have been more than doubled in capacity, and other lines have been added to the specialties made by the old company. One of the most important departures was the erection of the malleable foundry, by which the company are enabled to manufacture all their own malleable castings and to supply the trade to some extent. This was rendered necessary by the difficulty experienced in securing malleable castings, owing to the very great demand in that branch of business for several years. The company have not hesitated at any time to make improvements and enter into new lines whenever it has seemed desirable to do so. They are now in the midst of further enlargements, and still others are contemplated in the near future.

The ground plan of the company's works is given herewith, which shows their extent and character. The property of the company comprises 8 acres, which is now largely covered by buildings, but affords sufficient room for the extensions contemplated. The buildings are scattered, instead of the operations being largely connected under one roof. This reduces the fire risk and also adds to the comfort of the workmen, who thus secure better light and ventilation.

The principal building is two stories in hight, and for the most part is 60 feet wide. It is 343 feet long, but 110 feet at the center has been widened 56 feet for the purpose of enlarging the machine shop. This building contains on the ground floor the offices and shipping room, the department for assorting malleable castings and finishing registers, the machine shop and blacksmith shop. The second story is used partly as a pattern shop, partly as a stock room for the storage of finished products ready for shipment, and partly as a sample room for the display of the various patterns of Warm Air Registers. The machine shop forms a very important part of this building. When the steel is received for the manufacture of Door Hangers it is here passed through the various processes necessary for the manufacture of wheels and frames. The Door Hangers are completely finished in this shop. The machines comprise the usual presses, punches, drills, &c., with some special machines used for the manufacture of parts which are peculiar to the company's patterns. A very systematic tool room is an adjunct to the machine shop. The superintendent's office is placed close to the tool room, enabling him to keep a thorough oversight over all departments. This office is connected with the main office and with all departments of the plant by telephone. The blacksmith shop, which is located next to the machine shop, is fitted with a large power hammer and presses for turning out shape work. The pattern shop on the second floor is largely devoted to the manufacture of metal patterns, as the company use wood patterns to a comparatively small extent.

In the rear of the main building is located the engine and boiler house, 22 x 40 feet. This house contains two 100 horse-power boilers and a 100 horse-power engine, with a dynamo. This engine is only used for furnishing power to the main building. The boilers also furnish steam to another engine located in a building adjoining the malleable foundry, and which furnishes power for the malleable and gray iron foundries, and their cleaning and polishing rooms, &c. The dynamo is used for furnishing electric light, the entire plant being lighted by the electricity thus generated.

The gray iron foundry occupies a building of irregular size, which is 100 feet wide in the center and 262 feet in length of the longest side. This foundry is used for manufacturing small castings almost exclusively. The work done is therefore nearly all bench work. The company use molding machines of their own design and manufacture. Making many duplicates of the same pattern, it has been found highly desiraole to use molding machines, and the design adopted has been very satisfactory in rapidity of production and excellence of product. The cupola of this foundry is 42 inches inside diameter, and it has a melting capacity of 15 tons per day. Tests of all heats are daily taken and the test bars are preserved in the superintendent's office. The castings are cleaned in the same building. Large castings are cleaned by being dipped in sulphuric acid, while the smaller ones are cleaned in tumbling barrels. A room is devoted to grinding and polishing, and another to electroplating. Any kind of electroplating is done.

The malleable foundry is a fine building, occupying a space of 60 x 260 feet, with no posts to obstruct the floor. This foundry contains one 5-ton reverberatory furnace, from which three heats are taken daily. In a portion of this building two annealing ovens are located, in which the castings are annealed after being taken from the sand. Oil is used as fuel for operating the annealing ovens. This oil is stored in a large tank located some distance from the building in a corner of the grounds, from which it is piped to the burners under the ovens.

JOHN M. STOWELL.

The capacity of these two foundries is 2500 tons a year, of which 1000 tons are malleable and 1500 tons are gray iron.

The company pride themselves in taking good care of their customers' patterns. They have a fine fire proof building for this purpose, 36 x 50 feet, and constructed with brick walls and brick roof, in which all patterns are placed at night. One side of this vault is arranged for gray iron patterns and the other side for malleable patterns.

A large building, 50 x 90 feet, is arranged in a portion of the grounds isolated from other buildings, which contains the enameling and japanning ovens. This department is necessarily extensive, so much of the company's product being finished in enamel or japan. This department contains eight large ovens which are fired with coke.

The works are very complete for the company's purposes. They are able to manufacture everything they require, depending only on such raw materials as pig iron and steel. From the time the raw material is received no work is required to be done outside and no part is furnished by any outside concern. They even make their own brass and aluminum castings, and in every respect have endeavored to make themselves as independent as possible.

The plant is completely protected by an automatic sprinkler system. The sprinklers are arranged on the dry system, so that no danger exists of the pipes freezing in the winter. The company also have two well organized hose companies among their employees, who go through a monthly drill.

The products of this company are so varied that it is found necessary to get out a number of special catalogues. One catalogue, for instance, is devoted to Railway Door Hangers, another to Hot Air Registers and Ventilators, another to Wire Workers' Goods, such as Pickets, Rosettes, Fence Posts, Elevator Fixtures, &c.; another to Parlor and Barn Door Hangers, another to Tackle Blocks, another to Malleable Iron Clevises, another to the Hall Patent Grate Bars, which they manufacture. These goods are not only sold all over the United States, but a very fine start has been made in building up an export trade.

The company are steadily turning out new goods, having just placed on the market the Acme Ball Bearing Parlor Door Hanger, with adjustable track. They have added Chain Belting to their line of malleable products, and now turn out an extensive list of malleable specialties. They also make a great deal of stove work, both cast and malleable, for stove manufacturers who do not have foundries.

The shipping facilities are excellent. A spur track from the Chicago & Northwestern Railway Company runs into the grounds, with branches extending to various portions for the delivery of raw materials to convenient points.

The president of this company is John M. Stowell, who has long been connected with the Milwaukee iron trade, being one of the founders of the well-known Filer & Stowell Company, builders of heavy engines. Mr. Stowell is one of the veterans in the Western iron trade, and, being so widely known and highly esteemed, a portrait is presented herewith which is a most excellent likeness. George P. Jones of Chicago is vice-president, Charles E. Sammond is treasurer and manager, Robert Moscrip is secretary and Adolph Ricker is superintendent. A branch office is maintained at 86 Lake street, Chicago, which is in charge of A. W. Wagner.

H. R. Shields has purchased the general Hardware stock of Cady & Ralls, Osgood, Mo. The new proprietor has materially added to the stock thus acquired.

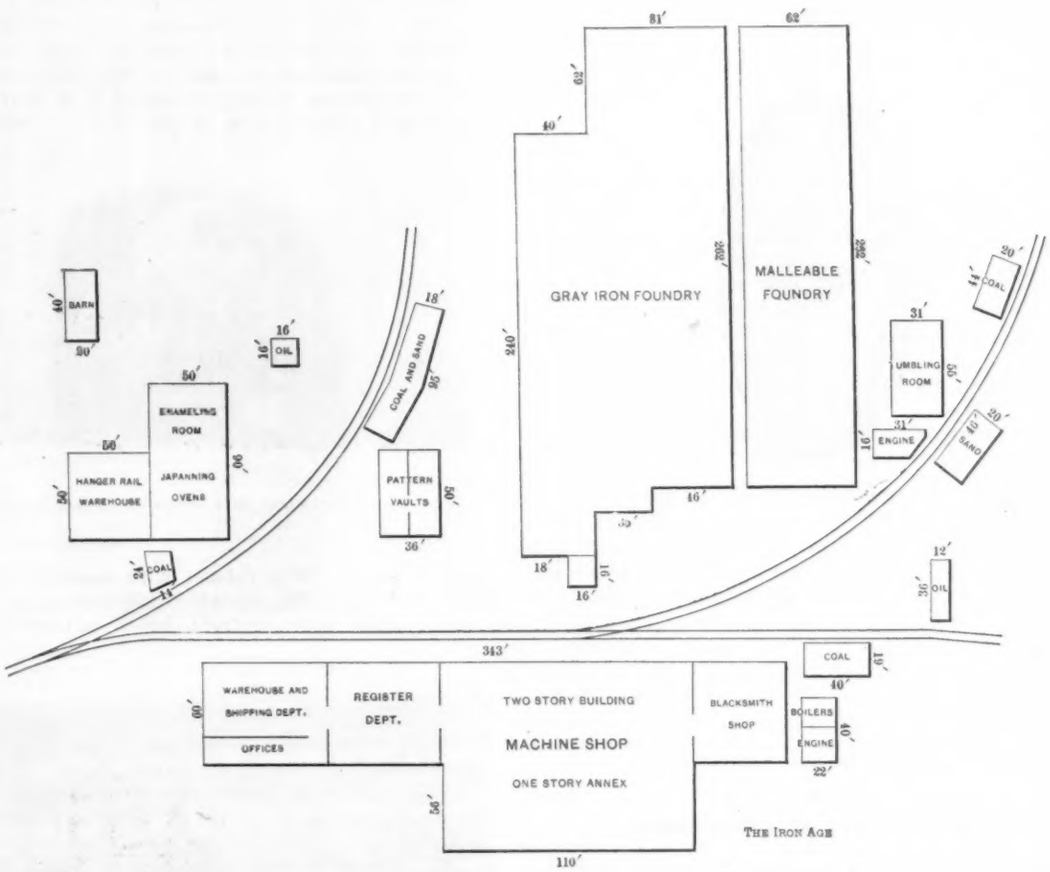
## MISCELLANEOUS NOTES.

### Steel Edge Plated Knife.

The steel edge plated knife manufactured by the Meriden Cutlery Company, Meriden, Conn., is made of solid steel and not of German silver, as was incorrectly stated in the illustrated description in our issue of August 15. The plating covers the entire knife, except for a short distance from the edge, allowing it to be sharpened.

### Forest City Bit & Tool Company.

The Forest City Bit & Tool Company, Rockford, Ill., have added a new line to their list of tools—namely, hollow and common mortising chisels. The company are the sole manufacturers of the Lanterman patent hollow mortising chisel. The chisel has fluted corners, and it is claimed will clear the chips better than any other form of hollow chisel, will not clog and get blued, and, therefore, will last longer and do superior work. The company have just issued a catalogue of mortising and boring machine supplies, which gives full particulars relative to the Lanterman hollow chisel as well as the common mortising chisels and some of the other specialties which they manufacture.




*Arrangement of Plant of Stowell Mfg. & Foundry Company.*

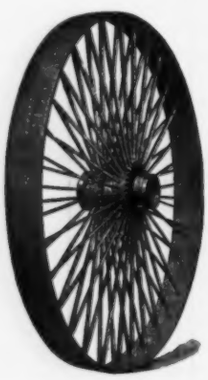
### The Murphy Trucks.

Allerton-Clarke Company, 97 Chambers street, New York, have just been appointed the general selling agents for the United States for the Murphy trucks, manufactured by the National Supply Company, 5 and 7 West Lombard street, Baltimore, Md. They are exclusive agents for these goods in New York territory. One style of the patented trucks is made in four and six wheel sizes, the latter turning in its own length on the center wheels. This style of truck is designed for moving dry goods and other cases, and is only 6 inches high, having square malleable iron frames warranted not to break, and listed respectively $36 and floor of hard wood, wrought iron ends, malleable corners

and steel axles. The center wheels are 10 inches high and end wheels 7 inches. It is 48 inches long, 27 inches wide and 30 inches high from truck floor. This truck, while suitable for a variety of uses, is particularly adapted for clothing factories, dry goods houses, tobacco warehouses, &c.

## Steel Vehicle Wheels.

The Electric Wheel Company, Quincy, Ill., are furnishing steel wheels for draft vehicles. The wheels are made in a variety of patterns suitable for the special purpose for which each kind of wheel is intended. An illustration is given herewith of what is known as their extra strong wheel, which is designed to carry loads of 6000 to 12,000 pounds. This wheel is adapted to use in foundries and rolling mills, for wagons and carts, also for special vehicles for mining, log hauling, sugar cane hauling, &c. It is made in all hights, from 20 to 60 inches, with all widths of tire and to fit any axle, and



*Steel Vehicle Wheels.*

with either direct or staggered oval steel spokes. The tires are furnished either ½, ⅝ or ¾ inch thick. When very wide tires are desired a band of the required width is shrunk on the outside of the tire made up with the wheel. The wheels are made exclusively of metal, are well adapted for use in dry climates, in which wooden wheels would shrink and speedily become unfitted for use. The company issue a catalogue relative to their steel wheels and handy wagons, which gives information to those interested in vehicles.

## The King Coat and Hat Hook.

The accompanying cut illustrates a wire coat and hat hook put on the market by the Parker Wire Goods Company, Worcester, Mass. It is pointed out that the brace

*The King Coat and Hat Hook.*

is fastened at both ends by twisting, and that the bearings are broad on both top and bottom hooks. The correctness of construction and the strength and neatness of the hook are alluded to. It is made in 2½, 3 and 3½ inch sizes, coppered, japanned, chestnut bronzed, retinned, brass plated, nickel plated and of brass.

## Cabinets and Cases.

Among the store fixtures recently put on the market by the J. D. Warren Mfg. Company, Chicago, Ill., are the cabinet and case illustrated herewith. In Fig. 1 is

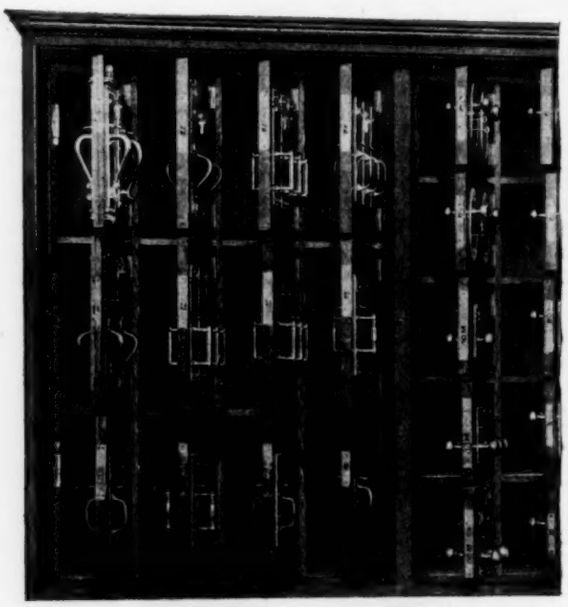


*Fig. 1.—Lock Cabinet with Miniature Doors Mounted.*

shown a portion of a cabinet with mounted builders' hardware on swinging miniature doors, arranged in consecutive order, showing front, inside and sliding door

*Fig. 2.—Interchangeable Drawer Bolt Case.*

trims. Compartments for stock are back of each door, all being protected by glass in front.

A part of a bolt case is illustrated in Fig. 2, which contains 120 drawers, divided into 480 spaces, with inside concave bottom. All the drawers are interchangeable and the partitions are removable.

# Current Hardware Prices.

REVISED AUGUST 20, 1901.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent discount.

**Cut Prices.**—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters Blind—

Domestic, ₩ doz. $3.00...33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

### Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

## Ammunition—See *Caps, Cartridges, Shells, &c.*

## Anvils—American—

Eagle Anvils.....₩ lb 7¼@7¾¢
Hay-Budden, Wrought.....9¢@9¼¢
Horseshoe brand, Wrought.....9¢@9¼¢
Samson.....₩ lb 7 ¢@8¢
Trenton, Wrought.....₩ lb 8¼@8¾¢

### Imported—

Peter Wright's.....9¼¢@9¾¢

## Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

## Apple Parers—See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

## Augers and Bits—

*Com. Double Spur.....70@..%*
*Boring Machine Augers.....60&10&10@70&10%*
*Car Bits, 12-in. twist.....60@60&10%*
*Jennings' Pattern Auger Bits.....50&10&5@60%*
Ford's Auger and Car Bits.....40&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings 'list....40%
No. 30, R. Jennings' List.....50%
Russell Jennings'.....35&10&2½%
L'Hommedieu Car Bits 15&10@15&10&5%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

## Bit Stock Drills—

*Standard List.....65@65&5%*

## Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....60%

## Gimlet Bits—

*Common Double Cut..gro. $2.25@2.75*
*German Pattern.....gro. $3.25@4.50*

## Hollow Augers—

*Bonney Pattern, per doz. $11.00@11.50*
Ames.....25&10%
New Patent.....25&10%
Universal.....20%
Wood's Universal.....25%

## Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

## Awl Hafts, See *Hafts, Awl.*

## Awls—

*Brad Awls:*
*Handled.....gro. $2.75@3.10*
*Unhandled, Shouldered.gro.63@66¢*
*Unhandled, Patent.....gro. 66@70¢*
*Peg Awls:*
*Unhandled, Patent.....gro. 31@34¢*
*Unhandled, Shouldered.gro.65@70¢*
*Scratch Awls:*
*Handled, Common..gro. $3.50@4.00*
*Handled, Socket..gro. $11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

## Axes—

*First Quality, best brands.$5.50@6.75*
*First Quality, other brands$5.25@5.50*
*Jobbers' Special Brands:*
*Good Quality.....$5.00@5.25*
*Best Quality.....$5.25@5.75*
*Cheap, Handled Axes.....$5.50@5.75*
*Beveled, add 25c doz.*

## Axle Grease—See *Grease, Axle.*

## Axles—

*Iron or Steel.*
*Concord, Loose Collar.....4½@5¢*
*Concord, Solid Collar.....4¾@5¼¢*
*No. 1 Common.....3¾@4¾¢*
*No. 1½ Com. New Style..3¾@4 ¢*
*No. 2, Solid Collar.....4¼@4½¢*
*Nos. 11 to 14.....70@70&10%*
*Nos. 15 to 18.....75@75&10%*
*Nos. 19 to 22.....75@75&10%*

*5% cash 10 days.*

## Boxes, Axle—

*Common and Concord, not turned.. lb. 4¼@4½¢*
*Common and Concord, turned..... lb. 4¾@5¢*
*Half Patent.....lb. 8@9¢*

## Balances—

Caldwell new list.....50%
Pollman's.....60%

## Sash—Spring—

*Spring Balances.....50&10@50&10&5%*
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Pelouze.....50%

## Barb Wire—See *Wire, Barb.*

## Bars—Crow—

*Steel Crowbars, 10 to 40 lb., per lb.. 2¾@3¢*

## Beams, Scale—

*Scale Beams, List Jan. 12, '81.30&10%*
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

## Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₩ gro. $6.50
No. 10 Cast Handle Dover..₩ gro. $8.00
No. 10 Steel Handle Dover.₩ gro $8.00
No. 15 Extra Heavy Steel Handle, ₩ gro. $15.00
Rival, ₩ gro.....$10.00
Taplin Mfg. Co.: ₩ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size tinned... $9.50
No. 150 Large Family size.....$15.00
No. 152 Large Family size, tinned..... $17.00
Lyon's, Standard size.....₩ doz. $1.75
Wonder (S. S. & Co.).....₩ gro. $7.50

## Bellows—

*Blacksmith, Standard List.70@70&10%*
C. E. Jennings & Co., Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓&5

### Blacksmiths—

| *Inch..* | *30* | *32* | *34* | *36* | *38* | *40* |
|---|---|---|---|---|---|---|
| *Each..* | *$3.50* | *3.75* | *4.25* | *4.80* | *5.35* | *6.15* |

*Extra Length:*
*Each..$4.00 4.55 5.10 5.60 6.40 7.50*

### Molders—

| *Inch..* | *9* | *10* | *11* | *12* | *14* | *16* |
|---|---|---|---|---|---|---|
| *Doz...* | *$6.75* | *7.25* | *8.50* | *9.50* | *12.00* | *14.50* |

### Hand—

| *Inch...* | *6* | *7* | *8* | *9* | *10* | *12* |
|---|---|---|---|---|---|---|
| *Doz....* | *$3.75* | *4.25* | *4.50* | *5.00* | *5.7* | *6.75* |

*Net Prices.*

## Bells—Cow—

*Ordinary goods.....75&5@75&10%*
*High grade.....70@70&10%*
Jersey.....75&10%
Texas Star.....50%

### Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's.....40@40&10%
Yankee Gong.....35%

### Hand—

*Hand Bells, Polished.....60&5@66⅔%*
*White Metal.....55@55&10%*
*Nickel Plated.....50@55&10%*
*Swiss.....60@60&7½%*
Silver Chime.....33⅓@33⅓&10%

### Miscellaneous—

*Farm Bells.....lb. 2@2¼¢*
*Steel Alloy Church and School..... 50&10&5@60%*
National Bell Foundry Co.:
Superior Cast Steel Church and School Bells.....50&10&5&60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%

## Belting—Rubber—

*Agricultural (Low Grade).75&10@80%*
*Common Standard.....75@75&10%*
*Standard.....70@70&10%*
*Extra.....60&10&5%*
*High Grade..... 50&10@50&10&5%*
Boston Belting Co.:
Seamless Stitched, Imperial.....45&5%
Boston.....50&5%
Niagara.....60&5%

### Leather—

*Extra Heavy, Short Lap...50&10@80%*
*Regular Short Lap 60&10@60&10&5%*
*Standard.....60&10&10@70&5%*
*Light Standard.....70@70&10%*

### Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand..... 70%

## Bench Stops—See *Stops, Bench*

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

## Bicycle Goods—

John S. Leng's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

## Bit Holders—See *Holders.*

## Blind Adjusters—See *Adjusters, Blind.*

## Blind Fasteners—See *Fasteners, Blind.*

## Blind Staples—See *Staples, Blind.*

## Blocks—Tackle—

*Common Wooden.....70@70&10%*
Cleveland's Steel.....60&10@70%
Ford's Star Brand Self Lubricating..... 60&10%
Hollow Steel, Ford's Pat. Star Brand..... 50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

## Boards Stove—

*Zinc, Crystal, &c.....40&10@..%*

## Bolts—

### Carriage, Machine &c.—

*Common, list Jan. 3), '95...65&10@..%*
*Norway Iron, $3.00, list Oct. 7, '84... 80&30&5%*
*Phila. Eagle, $3.00 list May 24, '99.... 80@80&10%*
*Bolt Ends, list Jan. 30, '95.70&7½@..%*
*Machine, list Oct. 1, '99.....70&7½@..%*
*Machine with C. P., C. & T. Nuts. 65&12½&5%*

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

## Door and Shutter—

*Cast Iron Barrel, Round Brass Knob:*

| *Inch.....* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz...* | *$0.26* | *.30* | *.39* | *.47* | *.65* |

*Cast Iron Spring Foot:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.25* | *1.75* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *1.05* | *1.30* |

*Cast Iron Shutter, Brass Knobs:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.57* | *.80* | *1.00* |

*Wrought Barrel Brass Knob:*

| *Inch.....* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz...* | *$0.44* | *.50* | *.61* | *.70* | *1.23* |

*Wrought Barrel .....70&10@75&5%*
*Wrought " Bronzed.40&5@50&10%*
*Wrought Flush, B. K..50&10@60&10%*
*Wrought Shutter...40&10&10@50&5%*
*Wrought Square Neck.....50@50&10%*
*Wrought Sunk.....50@50&10%*
Ives' Patent Door.....60%

## Stove and Plow—

*Plow.....60&10@..%*
*Stove.....77½%*

## Tire—

*Common.....77½%*
*Norway Iron.....80@80&5%*
American Screw Company:
Norway Phila., list Oct. 16, '84....82½%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila, list Oct. 16, '84..82½%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila. list Oct. '84.....85%
Norway Phila. list Oct. '84.....82½%

## Borers, Tap—

*Borers Tap, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz..* | *$4.30* | *5.00* | *5.75* | *7.25* |
| *Inch .....* | | | *2¼* | *2½* |
| *Per Doz.....* | | | *$8.65* | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

## Boring Machines—See *Machines, Boring.*

## Boxes, Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., $30.....40%

## Braces—

NOTE.—*Most Braces are sold at net prices.*
*Common Ball, American..$1.15@1.25*
Barber's.....50&10&10@50&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
P., S. & W. Co Peck's Patent..... 60&10@65&5%

## Brackets—

*Wrought Steel.....75&5@75&10%*
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

## Bright Wire Goods—See *Wire and Wire Goods.*

## Broilers—

Wire Goods Co.....75%

## Buckets, Well and Fire—See *Pails*

## Bucks, Saw—

Boss.....₩ gro. $48.00
Hoosier.....₩ gro. $36.00

## Bull Rings—See *Rings, Bull.*

## Butts—Brass—

*Wrought list Sept., '96.....40@40&5%*
Cast Brass, Tiebout's.....50%

### Cast Iron—

*Fast Joint, Broad.....50@50&10%*
*Fast Joint, Narrow.....50@50&10%*
*Loose Joint.....70&5@70&10%*
*Loose Pin.....70&5@70&10%*
*Mayer's Hinges.....70&5@70&10%*
*Parliament Butts.....70&5@70&10%*

### Wrought Steel—

*Table and Back Flaps...60&10%*
*Narrow and Broad.....60&10%*
*Inside Blind.....66⅔%*
*Loose Pin.....70&10%*
*Loose Pin, Ball and Steeple Tip.....70&10%*
*Japanned, Ball Tip Butts...60%*
*Bronzed Wrt. Nar. and Inside Blind Butts.....45%*

*Extra 25@ 35&5%*

## Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

## Calipers—See *Compasses, Calks, Toe and Heel—*

*Blunt, 1 prong.....per lb..3¼@3¢*
*Sharp, 1 prong.....per lb... 4@4½¢*
Perkins' Blunt Toe.....₩ lb 3½¢
Perkins' Sharp Toe.....₩ lb 4 ¢

## Can Openers—See *Openers, Can*

## Cans, Milk—

| | 5 | 8 | 10 gal. | |
|---|---|---|---|---|
| Illinois Pattern. | $1 75 | 2.10 | 2.25 | each. |
| Iowa Pattern.. | .... | 2.40 | 2.60 | each. |
| Buffalo Pattern. | .... | 2.30 | 2.50 | each. |
| | 20 | 30 | 40 | qts. |
| New York Patt'rn | 3.00 | 3.25 | 3.40 | each. |
| Baltimore Patt'rn | 2.50 | 2.85 | 3.10 | each. |

## Cans, Oil—

Buffalo Family Oil Cans:

| 3 | 5 | 10 gal. |
|---|---|---|
| $48.00 | 60.00 | 108 gro |

## Caps—Percussion—

| | |
|---|---|
| Eley's E. B. | .60c |
| G. D. | per M 32@34c |
| F. L. | per M 37@40c |
| G. E. | per M 47@50c |
| Musket | per M 57@60c |

### Primers—

*Berdan Primers, $1.00.....5%*
B. L. Caps (Sturtevant Shells) *$1.00*.....5%
*All other primers.....$1.10@$1.15*

## Carpet Stretchers—See *Stretchers, Carpet.*

### Cartridges—
*Blank Cartridges:*
*32 C. F., $5.50* ..... 10c&5@10c&10%
*38 C. F., $7 00* ..... 10c&5@10c&10%
*22 cal. Rim, $1.50* ..... 10c&5@10c&10%
*32 cal. Rim, $2.75* ..... 10c&5@10c&10%
*B. B. Caps, Con. Ball Swgd.* $1 80@1.85
*B. B Caps, Round Ball* ... $1.10@1.15
*Central Fire* ..... 25@25 & 5%
*Pistol and Rifle* ..... 15c&5@15c&10%
*Primed Shells and Bullets* .....
15c&5@15c&10%
*Rim Fire Sporting* ..... 50@50&5%
*Rim Fire, Military* .... 15&5@15c&10%

### Casters—
*Bed* ..... 70@70c&10%
*Plate* ..... 75@75c&10%
*Philadelphia* ..... 75@75c&10%
Boss ..... 70c&10%
Boss Anti-Friction ..... 70c&10%
Martin's Patent (Phœnix) ..... 45%
Payson's Anti-Friction ..... 70c&10&10%
Standard Ball Bearing ..... 45%
Tucker's Patent, low list ..... 80%

### Cattle Leaders—
See *Leaders, Cattle.*

### Chain, Coil—
NOTE.—*The following prices are f. o. b. Pittsburgh. Manufacturers in quoting usually add freight to destination.*
*American Coil. Cask lots:*

| 3-16 | 1/4 | 5-16 | 3/8 | 7-16 | 1/2 | 9-16 |
|---|---|---|---|---|---|---|
| 7.45 | 5.55 | 4.55 | 3.70 | 3.55 | 3.45 | 3.40 |
| 5/8 | 3/4 | 7/8 to 1 | | 1 1/8 to 1 1/4 inch. | | |
| 3.40 | 3.35 | 3.35c. per lb. | | 3.50 per 100 lb. | | |

*Less than Cask lots add 25c.*
*German Coil, list July 24, '97.* 60 & 10c & 10%

### Halters and Ties—
*Halter Chains* ..... 50c&10%
*German Halter Chain, list July 24, '97* ..... 60c&10c&10%
*Cow Ties* ..... 60%

### Trace, Wagon, &c.—
*Traces, Western Standard: 100 pair*
*6½—6-3, Straight, with ring* ... $30.00
*6½—6-2, Straight, with ring* .. $31.00
*6½—8-2, Straight, with ring* .. $35.00
*6½—10-2, Straight, with ring* .. $38.00
*Add 2¢ per pair for Hooks.*
*Twist Traces 2¢ per pair higher than Straight Link.*
*Trace, Wagon and Fancy Chains* .....
50c&10@50c&10c&5%

### Miscellaneous—
*Jack Chain, list July 10, '98:*
*Iron* ..... 60@60c&10%
*Brass* ..... 60@60c&10%
*Safety Chain* ..... 70c&5@70c&10%
*Gal. Pump Chain* ..... lb. 6¼@6¼c
Covert Mfg. Co.:
Breast ..... 35&2%
Halter ..... 35&2%
Heel ..... 35&2%
Rein ..... 35&2%
Stallion ..... 35&2%
Covert Sad. Works:
Breast ..... 70%
Halter ..... 70%
Hold Back ..... 70%
Rein ..... 70%
Oneida Community:
Am. Coil and Halters ..... 50&10&5@60%
Am. Cow Ties ..... 35&5@40&5%
Eureka Coil and Halter ..... 60@60&5%
Niagara Coil and Halters ..... 60@60&5%
Niagara Cow Ties ..... 45&5@45&10&5%
Wire Goods Co.:
Dog Chain ..... 60&10%
Universal Dis-Jointed Chain ..... 50%

### Chalk—(From Jobbers.)
*Carpenters' Blue* ..... gro. 42@45c
*Carpenters', Red* ..... gro. 37@40c
*Carpenters', White* ..... gro. 33@35c
*See also Crayons.*

### Chalk Lines—See *Lines.*

### Checks, Door—
Bardsley's ..... 40&10%
Columbia ..... 50&10%
Eclipse ..... 60@60&10%

### Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools ..... 35%
Youths' Chests, with Tools ..... 40%
Gentlemens' Chests, with Tools ..... 30%
Farmers', Carpenters', etc., Chests, with Tools ..... 30%
Machinists' and Pipe Fitters' Chests, Empty ..... 50%
C. E. Jennings & Co.'s Machinists' Tool Chests ..... 30%

### Chisels—

### Socket Framing and Firmer
*Standard List* ..... 70c&5@7 c&10%
Buck Bros ..... 30%
Charles Buck ..... 30%
C. E. Jennings & Co. Socket Firmer No. 10 ..... 60&10%
C. E. Jennings & Co. Socket Framing No. 15 ..... 60&10%
Swan's ..... 70c&5%
L. & I. J. White ..... 30@30&5%

### Tanged—
*Tanged Firmers* ..... 40c&5@40&10%
Buck Bros ..... 30%
Charles Buck ..... 30%
C. E. Jennings & Co. Nos. 191, 181. ..... 25%
L. & I. J. White, Tanged ..... 25&5%

### Cold—
*Cold Chisels, good quality, lb.* 13@15c
*Cold Chisels, fair quality* ... lb. 11@12c
*Cold Chisels, ordinary* ..... lb. 8@9c

### Chucks—
Beach Pat., each $8.00 ..... 20%
Lassey's Planer and Milling ..... 15@20%
Skinner Patent Chucks:
Combination Lathe Chucks ..... 40%
Drill Chucks, Patent and Standard ..... 30%
Drill Chucks, New Model ..... 2 %
Independent Lathe Chucks ..... 40%
Improved Planer Chucks ..... 25%
Universal Lathe Chucks ..... 40%
Face Plate Jaws ..... 40%
Standard Tool Co.:
Improved Drill Chuck ..... 45%
Union Mfg. Co.:
Combination ..... 40%
Czar Drill ..... 30%
Geared Scroll ..... 30%
Independent ..... 40%
Union Drill ..... 30%
Universal ..... 40%
Face Plate Jaws ..... 35%

### Clamps—
Adjustable, Hammers' ..... 20@20&5%
Cabinet, Sargent's ..... 50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's ..... 50&10%
Beaver, Parallel ..... 33⅓&10%
Lineman's, Udica Drop Forge & Tool Co ..... 40%
Saw Clamps, see *Vises, Saw Filers'.*

### Cleaners Sidewalk—
Star Socket, All Steel ..... ₩ doz. $4.00 net
Star Shank, All Steel ..... ₩ doz. $3.75 net
W. & C. Snaik, All Steel, 7½ in. ₩ doz., $3.05; 8 in., $3.10; 8½ in., $3.25.

### Cleavers, Butchers'—
Foster Bros ..... 30%
New Haven Edge Tool Co.'s ..... 40%
Fayette R. Plumb ..... 33⅓&10%
P., S & W ..... 50&5&5%
L. & I. J. White ..... 25%

### Clippers—
Chicago Flexible Shaft Company
Handy Toilet ..... ₩ doz. $7.20
Mascotte Toilet ..... ₩ doz. $3.40
Monitor Toilet ..... ₩ doz. $9.00
Stewart's Patent ..... ₩ doz. $10.00

### Clips Axle—
*Eagle and Superior ¼ and 5-16 inch* ..... 70c&10%
*Norway, ½ and 5-16 inch* .. 70@70c&10%

### Cloth and Netting, Wire—*See Wire, &c.*

### Cocks, Brass—
*Hardware list:*
*Compression and Plain Bibbs.* 65c&5%
*Globe, Kerosene, Racking, &c., Cocks* ..... 65c&10%

### Coffee Mills—See *Mills, Coffee.*

### Collars Dog—
Brass, Pope & Stevens' list ..... 40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather Pope & Stevens' list ..... 40%

### Compasses, Dividers, &c.
*Ordinary Goods* ..... 70c&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers ..... 65%
Calipers, Call's Patent Inside ..... 55%
Calipers, Double ..... 65%
Calipers, Inside or Outside ..... 65%
Calipers, Wing ..... 60%
Compasses ..... 50%
J. Stevens A. & T. Co ..... 25&10%

### Compressors Corn Shock—
J. B. Hughes' ₩ doz ..... $2.50

### Conductor Pipe, Galva.—
*L. C. L. to Dealers:*

| Territory. | Not nested. | Nested. |
|---|---|---|
| Eastern .... | 70c&2½% | 70c&5% |
| Central .... | 65c&10% | 70% |
| Southern .. | 65% | 65c&2½% |
| S. Western. | 60c&12½% | 60c&15% |

*Terms, 2% for cash.*
*Jobbers receive extra 12½&2½ on carloads loose, and extra 12½ on carloads crated.*
See also *Eave Troughs.*

### Coolers, Water—

| Nos. | 3 | 4 | 6 |
|---|---|---|---|
| Labrador | $11.50 | $14.00 | $17.50 | $20.00 |
| 8 gal. | $2.00 | | | |

| No | 3 | 4 | 6 | 8 |
|---|---|---|---|---|
| Iceland | $23.00 | $25.00 | $30.00 | $37.50 |
| 10 gal. | $57.00 | $74.00 | | |

### Coopers' Tools—See *Tools, Coopers'.*

### Cord—Sash—
*Braided, Drab* ..... lb. 25c
*Braided, White, Common, lb* 17½@18c
*Cable Laid Italian* .. lb. A, 18c; B, 16c
*Common India* ..... lb 9 @9½c
*Cotton Sash Cord, Twisted* .... 13@16c
*Patent Russia* ..... lb. 13½@15c
*Cable Laid Russia* ..... lb. 13¼@14c
*India Hemp, Braided* ..... lb 14@15c
*India Hemp, Twisted* ..... lb. 10@12c
*Patent India, Twisted* ..... lb. 10@12c
Pearl Braided, cotton ..... ₩ lb 17@18¢
Massachusetts, White ..... ₩ lb 22½¢
Massachusetts, Drab ..... ₩ lb 26½¢
Eddystone Braided Cotton ..... ₩ lb 14¢
Harmony Cable Laid Italian ..... ₩ lb 18¢
Oswayan Mills:
Crown, Solid Braided White ... ₩ lb 22¢
Braided, Giant, White ..... ₩ lb 20¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 14¢
Cable Laid India ..... 12¢
Braided India ..... 18¢
Phœnix, White ..... 19¢
Samson:
Braided, Drab Cotton ..... ₩ lb 32½¢
Braided, Italian Hemp ..... ₩ lb 32½¢
Braided, Linen ..... ₩ lb 40¢
Braided, White Cotton, Spot ₩ lb 28½¢
Silver Lake:
A quality, Drab, 40¢ ..... 15%
A quality, White, 35¢ ..... 15%
B quality, Drab, 35¢ ..... 15%
B quality, White, 30¢ ..... 15%
Italian Hemp, 40¢ ..... 15%
Linen, 57½¢ ..... 15%

### Wire, Picture—
*Braided or Twisted* ..... 85@85c&10%
*Note.—There is a good deal of confusion in lists, some using old list and others the new list.*

### Corn Knives and Cutters—See *Knives, Corn.*

### Corn Planters—See *Planters, Corn—*

### Crackers, Nut—
Little Giant ..... ₩ gr. $24.00

### Cradles—
*Grain* ..... 50%

### Crayons—
*White Round Crayons, gross* 5½@6c
*Cases, 100 gro., $5.50, at factory.*
D. M. Steward Mfg. Co.
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square ..... gr. $1.50
Rolling Mill Crayons ..... gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

### Creamery Pails—See *Pails, Creamery.*

### Crooks, Shepherds'—
Fort Madison, Heavy ..... ₩ doz. $7.00
Fort Madison, Light ..... ₩ doz. $6.50

### Crow Bars—See *Bars, Crow*

### Cultivators—
Victor Garden ..... ₩ doz. $10.00

### Cutlery, Table—
International Silver Company:
No. 12 Medium Knives, 1847 ... ₩ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ₩ doz. $3.00
Wm. Rogers & Son ..... ₩ doz. $2 50
Simeon L. & Geo. H. Rogers Company:
12 dwt. Medium Knives ..... ₩ doz. $3.00
No. 77 Medium Knives ..... ₩ doz. $2.50

### Cutters—Glass—
H. H. Mayhew Co ..... 40%
Smith & Hemenway Co ..... 50%

### Meat—
*Hale's..Nos. 11 & 111 12 & 112 13 & 113*
*Per doz .. $10.80 13 20 18.00*
American ..... 30%

| Nos | 1 | 2 | 3 | 4 | B | 5 |
|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $25 | $50 | $60 |

Connecticut ..... 50%

| No | 20 | 40 | 60 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|
| Each | $1.75 | 2.00 | 2.25 | 3.00 | 3.00 | 4.00 |

Enterprise ..... 25@25&7½%

| Nos | 5 | 10 | 19 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.50 | $4 | $6 |

Dixon's, ₩ doz ..... 30&10@40%

| Nos | 1 | 3 | 4 |
|---|---|---|---|
| inch | $14.00 | $17.00 | $19.00 | $30.00 |

Home No. 1, ₩ doz. $22.75 ..... 50&10%
Little Giant, ₩ doz ..... 33⅓&5@40%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $73.00 | $68.00 |

Sterling ..... 33⅓&5%

| Nos | 1 | 2 |
|---|---|---|
| Each | $2.00 | $2.50 |

New Triumph No. 605, ₩ doz. $24.00 .....
30&10@40%
Woodruff's, ₩ doz ..... 30&10@40%

| Nos | 100 | 150 |
|---|---|---|
| | $15.00 | $18.00 |

Chadborn's Smoked Beef Cutter, ₩ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

### Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c ..... 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9 55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters ..... 40%
Slaw Cutters, 1 Knife, ₩ gr. ... $18@$20
Slaw Cutters, 2 Knife, ₩ gr. ... $22@$36

### Tobacco—
*All Iron, Cheap* ..... dos. $4.25@$4.50
Enterprise ..... 25@30%
National, ₩ doz. $21.00 ..... 40%
Sargent's, ₩ doz., No. 2 ..... 45&10%
Sargent's No 12 and 21 ..... 5&10%

### Washer—
Appleton's, ₩ doz. $16.00 .... 50&10&10%
Bonney's ..... 40%

## Diggers, Post Hole, &c.—
Dalbey Post Hole Auger ... per doz. $9.00
Iwan's Improved Post Hole Auger .... 40%
Iwan's Perfection Post Hole Digger ..... ₩ doz. $9.00
Kohler's Universal ..... ₩ doz. $14.00
Kohler's Little Giant ..... ₩ doz. $14.00
Kohler's Hercules ..... ₩ doz. $12.00
Kohler's Invincible ..... ₩ doz. $10 00
Kohler's Rival ..... ₩ doz. $9.00
Kohler's Pioneer ..... ₩ doz. $9.00
Never-Break Post Hole Diggers, ₩ doz. $24.00 ..... 60%
Samson, ₩ dos. $34.00 ..... 25%

### Dividers—See *Compasses.*

### Dog Collars—See *Collars, Dog*

### Door Checks—See *Checks, Door.*

### Door Springs—See *Springs, Door.*

### Doors, Screen—
Porter's Plain, No. 6 ..... ₩ doz. $6 50
Porter's Ornamental, No. 70. ₩ doz. $10.00

### Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₩ doz. $18; No. 2, $15; No. 3, $12; No. 4, $18.

### Drawing Knives—See *Knives, Drawing.*

### Drills and Drill Stocks—
*Common Blacksmiths' Drill ... each* $1.50@$1.75
*Blacksmiths' Self-feeding ..... each* $3.75@4.00
Breast, Millers Falls, each $3.00 .15&10%
Breast, P., S. & W ..... 40@40&5%
Goodell Automatic Drills .. 40&5@40&10%
Johnson's Autom. Drills Nos. 2 and 3 ..... 16⅔%
Johnson's Drill Points ..... 25&1%
Ratchet, Curtis & Curtis ..... 25%
Ratchet, Parker's ..... 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's, P. S. & W ..... 50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 ..... 33⅓%

### Twist Drills—
*Standard List* ..... 60c&5@65c&5%

### Drill Bits or Bit Stock Drills—See *Augers and Bits.*

### Drill Chucks—See *Chucks.*

### Dripping Pans—See *Pans, Dripping.*

### Drivers, Screw—
*Screw Driver Bits ... per doz.* 45@70c
Balsey's Screw Holder and Driver, ₩ doz 9½-inch, $6; 4-in., $7.20 6-in., $9..40%
Buck Bros ..... 30%
Buck Bros' Screw Driver Bits ..... 30%
Champion ..... 40&10%
Douglass Mfg. Co ..... 20@20&10%
Gray's Hol. H'dle Sets, No. 8, $12.00 50%
Gay's Double Action Ratchet ..... 35
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle ..... 50%
Mayhew's Monarch ..... 40&10%
New England Specialty Co ..... 50&10%
Sargent & Co.'s:
Nos. 1, 50, 55 and 60 ..... 50&10&10%
Nos. 20 and 40 ..... 60½&10%
Smith & Hemenway Co ..... 40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 60&10%
No. 86 ..... 70&10%
Swan's:
Nos. 65 to 68 ..... 50%
No. 40 ..... 40&10%
Nos. 25, 35 and 45 ..... 20&10&10%

### Eave Trough Galvanized

| Territory. | L. C. L. | |
|---|---|---|
| Eastern | 75c&10% | Carloads extra 12½% |
| Central | 75c&7½% | |
| Southern | 70c&12½% | |
| S. Western | 70c&10% | |

*Terms, 2% for cash.*
See also *Conductor Pipe and Elbows.*

### Egg Beaters—See *Beaters, Egg*
### Egg Openers—See *Openers, Egg.*

### Elbows and Shoes—
*Factory shipments* ..... 60@60&10%
Perfect Elbows (S. S. & Co.) ..... 40%

### Emery, Turkish—

| | 4 to 6 | 8 to 12 | 50 Flour |
|---|---|---|---|
| Kegs | lb. 5c | 5½c | 8½c |
| ½ Kegs | lb. 5½c | 5¾c | 8¾c |
| Kegs | lb 5c | 6c | |
| 10-lb cans, 10 in case | 6¼c | 7c | 9c |
| 10-lb. cans, less than 10 | 10c | 10c | 8c |

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

### Enameled and Tinned Ware—See *Ware, Hollow.*

### Escutcheon Pins—See *Pins, Escutcheon.*

### Extractors, Lemon Juice—See *Squeezers, Lemon.*

## Fasteners, Blind—
Zimmerman's ..... 50&10%

### Faucets—
*Cork Lined* ..... 70c&5@70c&10c&5%
*Metallic Key, Leather Lined* ..... 70@70c&10%
*Red Cedar* ..... 50@50c&5%
B. & L. B. Co.:
Lockport, Metal Plug, reduced list 60&5%
Star ..... 60@60&5%
Star, Metal Plug new list ... 40@40&5%
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key .... 40%
John Sommer's Boss Tin Key ..... 50%
John Sommer's Victor Metal Key. 50&10%
John Sommer's Duplex Metal Key .... 60%
John Sommer's Diamond Lock ..... 40%
John Sommer's I. X. L. Cork Lined .. 50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Common Cork Lined. 70%
John Sommer's Chicago Cork Lined .. 60%
John Sommer's O. K. Cork Lined ..... 50%
John Sommer's Perfection Cedar .... 40%
McKenna, Brass:
Burglar Proof, N. P ..... 35%
Improved, ¾ and ⅞ inch ..... 35%
Self Measuring:
Enterprise, ₩ doz. $66.00 ..... 40&10%
Lane's, ₩ doz. $36.00 ..... 40&10%
National Measuring, ₩ doz. $66.00 .. 40%

### Ferrule Plates—See *Plates, Ferrule.*

### Files—Domestic—
*List revised Nov. 1, 1899.*
*Best Brands* ..... 70@75c&5%
*Good Brands* ..... 75c&10@75c&10c&10%
*Fair Brands* ..... 80@80c&10%
*Second Quality* ..... 80c&10@80c&25%

### Imported—
*Stubs' Tapers, Stubs' list, July 24, '97* ..... 45%

### Fixtures, Grindstone—
*Net Prices:*

| Inch | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| Per doz. | $2.60 | 3.75 | 5.00 | 3 50 | 4.50 |

P., S. & W. Co ..... 50&50&5%
Reading Hardware Co ..... 60%
Sargent's ..... 60&10&10%
Stowell's Giant Grindstone Hanger .... ₩ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy ..... 50&10&10%
Stowell's Grindstone Fixtures Light ... 60&10%

### Fodder Squeezers—See *Compressors.*

### Forks—
*Sept. 1, 1900, list.*
*Grain or Barley Forks, 18 to 20 inches* ..... 70c&5%
*Hay, 2 tine* ..... 65%
*Hay, 3 tine* ..... 66⅔%
*Hay, 4 tine, Header and Barley Forks, 13 to 16 inches* ..... 66⅔%
*Manure, 4 tine* ..... 70%
*Manure, 5 and 6 tine* ..... 70%
*Spading* ..... 70c&5%
Iowa Dig-Eez Potato ..... 65%
Victor, Hay ..... 66⅔%
Victor, Manure ..... 70%
Victor, Header ..... 60&30%
Champion, Hay ..... 66⅔%
Champion, Manure ..... 70%
Columbia, Hay ..... 66⅔&5%
Columbia, Manure ..... 70%
Columbia, Spading ..... 70%
Hawkeye Wood Barley 4 tine ₩ doz. $3.00; 6 tine, $6.00.
W. & C. Potato Digger ..... 65%
Acme Hay ..... 60&10&7½%
Acme Manure, 4 tine ..... 60&20&10%
Acme Manure, 6 tine ..... 60%&10&2½%
Dakota Header ..... 65&15&5%
Jackson Steel Barley ..... 65&15&5%
Kansas Header ..... 66⅔%
W. & C. Favorite Wood Barley 4 tine, ₩ doz., $5.00; 6 tine, $6.00
Plated.—See *Spoons.*

### Frames—Saw—
*Red, Polished and Varnished .. doz.* $1.15@$1.35
*White* ..... doz. 75@80c

### Screens and Frames—See *Screens.*

### Freezers, Ice Cream—

| Qts. | 2 | 3 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|---|
| Best. | $1.45 | 1.65 | 1.95 | 2.40 | 3.20 | 4.00 |
| Good | $1 25 | 1.40 | 1.70 | 2.15 | 2.75 | 3.75 |
| Fair | $1.00 | 1.20 | 1 50 | 1.75 | 2.50 | 3.50 |

### Fruit and Jelly Presses—See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse—
*Per 1000 Feet.*
*Hemp Fuse* ..... $2.60
*Cotton Fuse* ..... 2.80
*Single Taped Fuse* ..... 3.25
*Double Taped Fuse* ..... 4.20
*Triple Taped Fuse* ..... 5.00
10&2½%

## Gates, Molasses and Oil-

Stebbins' ..... 50@60&12½

## Gauges—

*Marking, Mortise, &c.* ..... 55&10@55&10@10%

Barrett's Comb. Roller Gauge ..... ₱ doz. $6.75@7.25

Stanley R. & L. Co.'s Butt & Babbet Gauge ..... 20&10%

Wire, Brown & Sharpe's ..... 25%

Wire, Morse's ..... 25%

Wire P., S. & W. Co ..... 30@30&10%

## Gimlets— Single Cut—

*Nail, Metal, Assorted, gro.* $1.40@1.60

*Spike, Metal, Assorted gro.* $2.80@3.25

*Nail, Wood Handled, Assorted, gro.* $1.75@2.00

*Spike, Wood Handled, Assorted gro.* $3.25@3.50

## Glass, American Window

*Jobbers' List, Jan. 21, 1901*

*Less than Carloads* ..... 80&20%

*Carloads* ..... 85&5%

*5000 Boxes* ..... 87%

## Glue—Liquid, Fish—

*List A, Bottles or Cans, with Brush.* 37½@50%

*List B, Cans (¼ pts., pts., qts.)* ..... 33⅓@38%

*List C, Cans (⅛ gal., gal.)* ..... 25@55%

International Glue Co. (Martin's) ..... 40&10@50%

## Glue Pots—See *Pots, Glue.*

## Grease, Axle—

*Common Grade* ..... *gro.* $5.00@6.00

Dixon's Everlasting ..... 10-lb pails, ea. 85¢

Dixon's Everlasting, in bxs.. ₱ doz. 1 lb $1.20; 2 lb $2.00

Snow Flake:
1 qt. cans, per doz. $2.00; 2 qt., $3.20; ½ gal. cans per doz. $6.00; 1 gal. $10.00; 5 gal. $24.00 } 33⅓%

## Grindstones—

Bicycle Grindstones, each ..... $2.50@3.00

Pike Mfg Co:
Improved Family Grindstones, per inch, per doz. ..... $2.00 } 33⅓%
Pike Mower Knife and Tool Grinder, each ..... $6.00

Velox Ball Bearing, mounted, Angle Iron Frames ..... each, $3.25

## Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000 ..... $9.00
Copper ₱ 1000 ..... $18.00

## Gun Powder—See *Powder.*

## Hack Saws—See *Saws.*

## Hafts, Awl—

*gro.*

*Peg Patent, Leather Top* ..$4.90@5.25

*Peg Patent, Plain Top* ....$3.50@3.75

*Sewing, Brass Ferrule* ..... $1.50@1.60

*Saddlers', Brass Ferrule* ..$1.35@1.45

*Peg, Common* ..... $1.25@1.35

*Brad, Common* ..... $1.50@1.75

## Halters and Ties—

Covert Mfg. Co.:
Web ..... 45&2%
Jute Rope ..... 45&2%
Sisal Rope ..... 30&2%

Covert's Saddlery Works:
Web and Leather Halters ..... 70%
Jute and Manila Rope Halters ..... 70%
Sisal Rope Halters ..... 60&20%
Jute, Manila and Cotton Rope Ties.. 70%
Sisal Rope Ties ..... 60&30%

## Hammers—

### Handled Hammers—

Heller's Machinists' ..... 50@50&5%

Heller's Farriers ..... 50@50&5%

Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%

Peck, Stow & Wilcox ..... 50&10%

Fayette R. Plumb:
Plumb, A. E. Nail ..... 40&10&7½%
Engineers' and B. S. Hand. 60&10&2½%
Machinists' Hammers ..... 60%
Riveting and Tinners' ..... 40&10&7½%
Sargent's C. S. New List ..... 45%

### Heavy Hammers and Sledges—

*3 lb. and under* ... *lb.* 45¢
*3 to 5 lb* ..... *lb.* 35¢ } 30&10@30
*Over 5 lb* ..... *lb.* 30¢ } &10&5%

*Wilkinson's Smiths'* ..... 9½¢@10¢ lb.

## Handcuffs and Leg Irons

See *Police Goods.*

## Handles—

### Agricultural Tool Handles—

*Axe, Pick, &c* ..... 60@60&10%

*Hoe Rake, Fork, &c* ..... 60@60&10%

*Shovel, &c., Wood D Handle.* 50@50&5%

### Cross-Cut Saw Handles—

Atkins' ..... 40&5%

Champion ..... 45@45&10%

Disston' ..... 50%

### Mechanics' Tool Handles—

*Auger, assorted* ..... *gro.* $2.30@2.50

*Brad Awl* ..... *gro.* $1.25@1.50

*Chisel Handles:*
*Apple Tanged Firmer, gro. ass'd.* $2.35@2.85; *large,* $3.50@3.60.
*Hickory Tanged Firmer, gro ass'd* $1.75@2.20; *large,* $3.50@3.70.
*Apple Socket Firmer, gro ass'd.* $1.70@1.85; *large,* $2.00@2.25
*Hickory Socket Firmer, gro ass'd.* $1.60 @ $1.75; *large,* $1.75 @ $2.00
*Hickory Socket Framing, gro. ass'd,* $2.50@2.75; *large,* $2.65@2.85
*File, assorted* ..... *gro.* $1.00@1.15
*Hammer, Hatchet, Axe, &c* ..... 60%
*Hand Saw, Varnished, doz.* 70@75c
*Not Varnished* ..... 55@60c
*Plane Handles:*
*Jack, doz.* 25c; *Jack Bolted* ..55@60c
*Fore, doz.* 35@38c; *Fore, Bolted* ..70@75c

## Hangers—

*Barn Door, New Pattern, Round Groove, Regular:*

| *Inch* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Doz* | $0.85 | 1.20 | 1.50 | 1.90 | 2.30 |

*Barn Door, New England Pattern, Check Back, Regular:*

| *Inch* | 3 | 4 | 5 | 6 |
|---|---|---|---|---|
| *Doz* | $1.30 | 1.75 | 2.50 | 3.00 |

Chicago Spring Butt Co.:
Friction ..... 25%
Oscillating ..... 25%
Big Twin ..... 25%

Chisholm & Moore Mfg. Co.:
Baggage Car Door ..... 50%
Elevator ..... 40%
Railroad ..... 55%

Cronk Hanger Co.:
Loose Axle ..... 60%
Roller Bearing ..... 60&10%

Lane Bros.:
Parlor, Ball Bearing ..... $4.00
Parlor, Standard ..... $3.25
Parlor, New Model ..... $2.75
Parlor New Champion ..... $2.25
Barn Door, Standard ..... 60&10%
Covered ..... 50&10&10&5%
Special ..... 60&10%

Lawrence Bros.:
Advance ..... 60%
Cleveland ..... 70%
Crown ..... 60%
New York ..... 60%
Peerless ..... 60&10%
Sterling ..... 60%

McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%

Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing ..... 40%
Atlas ..... 60%
Badger Barn Door ..... 50%
Baggage Car Door ..... 50%
Climax Anti-Friction ..... 50%
Elevator ..... 40%
Express ..... 50%
Interstate ..... 60%
Lundy Parlor Door ..... 50%
Magic ..... 50%
Matchless ..... 60%
Nansen ..... 60&10%
Railroad ..... 50%
Street Car Door ..... 50%
Steel, Nos. 300, 400, 500 ..... 40&15%
Stowell Parlor Door ..... 50%
Wild West, Nos. 300, 400, 500 ..... 50%

Zenith for Wood Track ..... 50%

Taylor & Boggs Foundry Co.:
Kidder's ..... 50&15&10&5%

Columbian Hdw. Co.:
American Trackless ..... 33⅓&10%

Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing ..... 50%
Dwarf Ball Bearing ..... 40%
Ives, Wood Track ..... 60&10%
L. T. Roller Bearing ..... 60&10&5%
New Era Roller Bearing ..... 50&10%
O. K. Roller Bearing ..... 60&10&5%
Prindle, Wood Track ..... 60%
Richards' Wood Track ..... 60%
Richards' Steel Track ..... 50&10%
Spencer Roller Bearing ..... 60&10%
Tandem Nos. 1 and 2 ..... 60%
Underwriters' Roller Bearing ..... 40%
Wilcox Auditorium Ball Bearing 20%
Wilcox Barn Trolley No. 123 ..... 40%
Wilcox Fire Trolley, Roller Bearing ..... 30%
Wilcox Le Roy Noiseless Ball Bearing ..... 40%
Wilcox New Century ..... 50&10&10%
Wilcox Trolley Ball Bearing ..... 40%

## Harness Menders—See *Menders.*

## Harness Snaps—See *Snaps.*

## Hasps—

McKinney's Perfect Hasp ₱ doz. ..... 50%

Wrought Hasps, Staples, &c.—See *Wrought Goods.*

## Hatchets—

*Best Brands* ..... 50@50&10%

*Cheaper Brands* ..... 60@60&10%

*Note.*—*Net prices often made.*

## Hay and Straw Knives—

See *Knives.*

## Hinges—

### Blind and Shutter Hinges—

*Surface Gravity Locking Blind:*
*(Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No* | 1 | 2 | 5 |
|---|---|---|---|
| *Doz. pair* | $0.75 | 1.45 | 2.90 |

*Mortise Shutter:*
*(L. & P., O. S., Dixie, &c.)*

| *No* | 1 | 1¼ | 2 | 2½ |
|---|---|---|---|---|
| *Doz. pair* | $0.60 | .55 | .52 | .45 |

*Mortise Reversible Shutter, (Buffalo, &c.)*

| *No* | 1 | 1½ | 2 |
|---|---|---|---|
| *Doz. pair* | $0.65 | .60 | .55 |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%

Parker ..... 70@75%

Reading's Gravity ..... 70&10%

Sargent's, Nos. 1, 2, 3, 11 & 13 ..... 70&10@70&20%

Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.80; with screws, $1.15.

Wrightsville H'dware Co.:
O. S., Lull & Porter ..... 80&2½%
Acme, Lull & Porter ..... 75&10
Queen City Reversible ..... 75&10%
Stenger's Positive Locking, Nos. 1 & 3 ..... 70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
1900, Old Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Tip Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
Shepard's Double Locking, Nos. 20 & 25 ..... 70&10%
Champion Gravity Locking, No. 75 ..... 75&7½%
Steamboat Gravity Locking, No. 10 ..... 75&7½%
Pioneer, Nos. 060, 45 & 5½ ..... 75&7½%
Empire, Nos. 101 & 103 ..... 70&7½%
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 60&10%

### Gate Hinges—

*Clark's or Shepard's—Doz. sets:*

| *No* | 1 | 2 | 3 |
|---|---|---|---|
| *Hinges with Latches* | $1.35 | 1.90 | 2.65 |
| *Hinges only* | $1.20 | 1.45 | 2.00 |
| *Latches only* | .60 | .60 | .65 |

*New England:*
*With Latch* ..... *doz* ....@$1.55
*Without Latch* ..... *doz.* ....@$1.25

*Reversible Self-Closing:*
*With Latch* ..... *doz.* ....@$1.80
*Without Latch* ..... *doz.* ....@$1.45

*Western:*
*With Latch* ..... *doz.* $1.50@1.75
*Without Latch* ..... *doz.* $0.95@1.20

Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

| No. | 1 | 2 | 4 |
|---|---|---|---|
| Hinges with Latches | $1.80 | 2.00 | 2.75 |
| Hinges only | 1.20 | 1.50 | 2.10 |
| Latches only | .65 | .65 | .70 |

### Spring Hinges—

*Holdback, Cast Iron, gro.* $7.00@7.25

*Non-Holdback, Cast Iron* ..... *gro.* $6.50@6.75

J. Bardsley
Bardsley's Patent Checking ..... 15%

Bommer Bros.:
Bommer Ball Bearing Floor Hinges ..... 40%
Bommer Spring Hinges ..... 40%

Chicago Spring Butt Co.:
Chicago ..... 95%
Floor Hinge ..... 50%
Garden City Engine House ..... 25%
Keene's Saloon Door ..... 25%
Triple End ..... 50%

Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50

Lawson Mfg. Co.:
Matchless ..... 35%
Matchless Pivot ..... 45%

Payson Mfg. Co.:
Oblique ..... 50&10%

Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. ..... $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 7 ..... ₱ gr. $9.00
New Idea, Double Acting ..... 45%

Columbian Hdw. Co.:
Acme, Wrt. Steel ..... 80%
Acme, Brass ..... 90%
American ..... 30%
Columbia, No. 14 ..... ₱ gr. $9.00
Columbia, No. 18 ..... ₱ gr. $25.00
Columbia, Adjustable ..... 30%
Gem, new list ..... 25%
Clover Leaf ..... ₱ gr. $12.50
Oxford new list ..... 25%

Extra 5&10% often given.

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—

*Strap and T Hinges, &c., list Mar. 15, 1901:*
*Light Strap Hinges* ..... 75%
*Heavy Strap Hinges* ..... 80%
*Light T Hinges* ..... 70%
*Heavy T Hinges* ..... 66⅔%
*Extra Heavy T Hinges* ..... 75&10% } *Extra* $0@25%

*Hinge Hasps* ..... 60%
*Cor. Heavy Strap* ..... 80%
*Cor. Ex. Heavy T* ..... 70&10%

*Screw Hook and Strap:*
*6 to 12 in* ..... *lb.* 3 c
*14 to 20 in* ..... *lb.* 2½c
*22 to 36 in* ..... *lb.* 2½c

*Screw Hook and Eye:*
*¾ to 1 inch* ..... *lb* 5 c
*⅝-inch* ..... *lb* 6 c
*½-inch* ..... *lb.* 7 c

### Miscellaneous—

Hoffman's Steel Spring Butt Hinges ..... 40&10%

Hoffman's Offset Refrigerator Hinges ..... 40&10%

## Hods, Coal—

| | *15* | *16* | *17* | *18 inch.* |
|---|---|---|---|---|
| *Galv. Open* | $2 10 | 2.55 | 2.80 | 5.15 ₱ doz. |
| *Jap. Open* | $1.60 | 1.90 | 2.10 | 2.40 ₱ doz. |
| *Galv. Funnel* | 2.65 | 3.05 | 3.35 | 3.65 ₱ doz. |
| *Jap. Funnel* | $2.10 | 2.45 | 2.65 | 2.90 ₱ doz. |

## Hoes— Eye—

*Scovil and Oval Pattern* ..... 60&5@60&10&5%

*Grub, list Feb. 23, 1899* ..70&5@70&10%

D. & H. Scovil ..... 85%

### Handled—

*Sept. 1, 1900, List:*
*Field and Garden* ..... 75&2%
*Ladies', Boys', Toy and Onion* ..... 70&10&10%
*Street and Mortar* ..... 75&7½&2%
*Cotton* ..... 70&10&10&5&2%
*Planters'* ..... 70&50%
*Weeding* ..... 75%

*Note.*—*Manufacturers and jobbers use a diversity of lists, and often sell at net prices.*

Ft. Madison Crucible Garden Hoe ..... 75&2%

Ft. Madison Crescent Cultivator Hoe, per doz. ..... 75&10&2%

Ft. Madison Mattock Hoes:
Regular Weight ..... ₱ doz. $4.50
Junior Size ..... ₱ doz. $4.00

Ft. Madison Sprouting Hoe, ₱ doz. $4.80

Ft. Madison Dixie Tobacco Hoe.. 75&20%

Kretsinger's Cut Easy, per doz.... 75&2%

Warren Hoe ..... 60%

W. & C. Ivanhoe ..... 75&2%

B. B. Cultivator Hoe ..... 75&10&2%

Acme Weeding ..... 75&10&2%

W. & C. Lightning Shuffle Hoe, ₱ doz. ..... $4.85

## Hog Rings and Ringers—

See *Rings and Ringers.*

## Hoisting Apparatus—

See *Machines, Hoisting.*

## Hollow Ware—

See *Ware, Hollow.*

## Holders— Bit—

Angular, ₱ doz. $24.00 ..... 45&10%

### Door—

Empire ..... 50%

## File and Tool—

C. E. Jennings & Co. Model Tool Holders ..... 33⅓%

Nicholson File Holders and File Handles ..... 33⅓%

## Hooks— Cast Iron—

Bird Cage, Reading ..... 60%
Bird Cage, Sargent's List ..... 50&10@60%
Ceiling, Sargent's List ..... 40&10%
Clothes Line, Hoffman's ..... 40&10%
Clothes Line, Reading List ..... 65&10@65&10&10%
Clothes Line, Sargent's List 50&10&10%
Coat and Hat, Sargent's List ..... 45&10%
Clothes Line, Stowell's ..... 70%
Coat and Hat, Stowell's ..... 70%
Coat and Hat, Reading ..... 70@75%
Coat and Hat, Wrightsville ..... 65&10%
Harness, Reading List ..... 70&10@75%

### Wire—

*Belt* ..... 30%
*Wire C. & H. Hooks* ..60¢10@50¢10&5%
Atlas, Coat and Hat:
Single Cases ..... 42%
10 Case Lots ..... 42&10%
Czar Harness ..... 60&10&5%
Wire Coat and Hat:
Acme ..... 60%
B. B ..... 60%
V Brace, Chief and Czar ..... 60%
Gem ..... 60%
Bright Wire Goods—See *Wire.*

### Wrought Iron—

*Box, 6 in., per doz.* $1.50; *8 in.,* $1.75; *10 in.,* $2.00.

*Cotton* ..... *doz.* $1.05@1.20
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

### Miscellaneous—

*Bush, Light, doz.* $5.50; *Medium,* $6.00; *Heavy,* $6.50

| *Grass* ..... *Nos.* | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| *Best* | $1.50 | 1.75 | 2.00 | |
| *Common* | $1.30 | 1.50 | 1.60 | 1.80 |

*Potato and Manure* ..... 70%
*Whiffletree* ..... lb. 4½¢
*Hooks and Eyes:*
*Brass* ..... 60¢10¢10@70%
*Malleable Iron* ..70¢25@70¢10%
Covert Saddlery Works' Self Locking Gate and Door Hook ..... 70%
Crown Picture ..... 50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

## Horse Nails—See *Nails, Horse.*

## Horseshoes—

See *Shoes, Horse.*

## Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition* ..... *ft.* 1¼@1½¢
*3-ply Standard* ..... *ft.* 1 @1 ¢
*4-ply Standard* ..... *ft.* 1 @1 ¢
*3-ply extra* ..... *ft.* 9 @10 ¢
*4-ply extra* ..... *ft.* 11 @12 ¢
*Cotton Garden, ¾-in., coupled:*
*Low Grade* ..... *ft.* 6 @7 ¢
*Fair quality* ..... *ft.* 8 @9 ¢

## Irons— Sad—

*From 4 to 10* ..... lb. 20@24¢
*B. B. Sad Irons* ..... lb. 24@26¢
*Chinese Laundry* ..... lb. 60@74¢
*Chinese Sad* ..... lb. 24@26¢
*Mrs. Potts', per set:*

| *Nos.* | 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| | 67@72c | 61@69c | 77@82c | 71@78c |

*New England Pressing* ..lb.. 24@26¢

## Soldering—

*Soldering Coppers, 1 & 1¼ lb., 21 @ 22c.; 2 lb., 19 @ 21c*
Covert Mfg. Co ..... 20&2½%
Smith & Hemenway Co's Sets ..... 70%

## Pinking—

*Pinking Irons* ..... *doz.* 50@60c

## Jack Screws—See *Screws.*

## Jacks, Wagon—

Covert Mfg. Co., Steel ..... 45&2½%
Covert's Saddlery Works':
Daisy ..... 60&10%
Victor ..... 60&10%
Lockport ..... 40@45&10%
Lane's Steel ..... 35@45%

## Kettles—

*Brass, Spun, Plain* ..... 20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

## Knife Sharpeners—

See *Sharpeners, Knife.*

## Knives—

### Butcher, Shoe, &c.—

Foster Bros.' Butcher, &c ..... 33%
Hartsell Cutlery Co ..... 60&10%
Smith & Hemenway Co ..... 40&10%
Hay and Straw—See *Hay Knives.*

### Corn—

Ft. Madison Cut-Easy, ₱ doz. ..... $2.50
Withington Acme, ₱ doz., $2.65; Dust, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 3, $1.15.

### Drawing—

*Standard List* ..... 70&5@70¢10%
Adjustable Handle ..... 35%
Bradley's ..... 35%
Cantelo's Folding ..... 50&20&5%
C. E. Jennings & Co. Nos. 45, 40.. 40&10%
Jennings & Griffin ..... 25&10&5%
Swan's ..... 70&10&5%
Watrous ..... 40%
L. & I. J. White ..... 20&5&5%

### Hay and Straw—

*Lightning Put n... per doz* $2.25@2.50
Iwan's Sickle Edge ..... ₱ doz. $1.75
Iwan's Serrated ..... ₱ doz., $1.40
Lightning, (Genuine) ..... $2.25@2.50
Maine ..... ₱ doz. $3.00

### Mincing—

Buffalo ..... ₱ gro. $15.00

### Miscellaneous—

*Farriers'* ..... *doz.* $2.00@2.50
Woodenholm's ..... ₱ doz. $3.00@3.25

## Knobs—

*Base, 2½-inch, Birch, or Maple, Rubber tip, gro* ..... $1.90@1.95
*Carriage, Jap, all sizes..gro.* 30@35c
*Door, Mineral* ..... *doz.* 60@65c
*Door, Por. Jap'd* ..... *doz.* 65@70c
*Door, Por. Nickel* ....*doz.* $2.00@2.10
Bardsley's Wood Door, Shutter, &c ..... 12½
Picture, Sargent's ..... 50&10%

## Ladders, Step—

Handy Ladder Works:

| Length. | Extended Length. | Shipped Ready for Use. | Per doz. | Shipped K. D. Per doz. |
|---|---|---|---|---|
| 4 | 7 | $16.00 | $24.00 | |
| 5 | 9 | 19.50 | 27.00 | |
| 6 | 11 | 24 50 | 33.00 | |
| 7 | 13 | 29.50 | 36.00 | |
| 8 | 15 | 34.00 | 39.00 | |
| 9 | 17 | 39.60 | 42.00 | |
| 10 | 19 | 43.00 | 45.00 | |
| 11 | 21 | 46.50 | 48.00 | |
| 12 | 23 | 51.00 | 51.00 | |

## Ladies— Melting—
L. & G. Mfg. Co. ..... 25%
P., S. & W. ..... 5%
Reading ..... 6%
Sargent's ..... 40@40&10%

## Lanterns— Tubular—
*Regular Tubular ..... doz. $4.35@4.75*
*Side Lift Tubular ..... doz. $4.75@5.25*
*Square Lift Tubular ..... doz. $4.75@5.25*
*Other Styles ..... 40&10@40&10&5%*

## Bull's Eye Police—
*No. 1, 2¾ inch ..... $3.60*
*No. 2, 3 inch ..... $4.00*

## Latches, Thumb—
*Roggin's Latches ..... doz. 30@33c*

## Lawn Mowers—
See *Mowers, Lawn.*

## Leaders. Cattle—
*Small ..... doz. 50c; large, 55c*
Covert Mfg. Co. ..... 45&2%

## Lemon Squeezers—
See *Squeezers, Lemon.*

## Lifters, Transom—
Solid Grip, Payson Mfg. Co. ..... 80%
R & E ..... 45%

## Lines—
| *Wire Clothes, Nos...* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet* | *$2.20* | *1.90* | *1.65* |
| *75 feet* | *$1.80* | *1.70* | *1.30* |

Ossawan Mills.
Crown Solid Braided Chalk ..... 33⅓&5%
Mason's, No. 0 to No. 5 ..... 33⅓&5%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3 ..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gr. ..... 30%

## Locks— Cabinet—
*Cabinet Locks ..... 33⅓@33⅓&7½&5%*

## Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]
Reading Hardware Co. ..... 50%
R. & E. Mfg. Co. ..... 50%
Sargent & Co. ..... 40@40&10%

## Elevator—
Stowell's ..... 40%

## Padlocks—
*Wrought Iron ..... 75&10@80%*
R. & E. Mfg. Co. Wrt. Steel a..d Brass 50%

## Sash, &c.—
Fitch's:
Bronze and Brass ..... 60&5%
Iron ..... 70%
Ives' Patent.:
Bronze and Brass ..... 67½%
Iron ..... 65%
Wrought Bronze and Brass ..... 55&5%
Wrought Steel ..... 60%
Payson's Signal ..... 80%
Reading ..... 60&10&10@70%

## Machines— Boring—
Without Augers.

| Upright. | Angular. |
|---|---|
| Improved No. 3...$4.25 | No. 1 $5.00 |
| Improved No. 4... 3.75 | No. 2 3.38 |
| Improved No. 5... 2.75 | |
| Jennings'..... 2.50 | 3.00 |
| Millers' Falls..... ..... | 5.75 |
| Snell's, Rice's Pat. 2.50 | 2.75 |
| Swan's, No. 500.. 5.10 | No. 200 6.45 |

## Hoisting—
Moore's Anti-Friction Differential Pulley Block ..... 30%
Moore's Hand Hoist, with Lock Brake 20%
Moore's Portable Pneumatic Hoist.... 25%

## Ice Cutting—
Chandler's ..... 15%

## Washing—
Wayne American ..... ₩ doz. $28.00
Western Star, No. 2 ..... ₩ doz. 28.00
Western Star, No. 3 ..... ₩ doz 30.00
St. Louis, No. 41 ..... ₩ doz. 60.00

## Mallets—
*Hickory ..... 45&5@50%*
*Lignumvitæ ..... 45@5@50%*
*Tinners', Hickory and Applewood, doz. ..... 50@55c*

## Mats—
Door—
Elastic Steel (W. G. Co.) ..... 10%

## Mattocks—
See *Picks and Mattocks.*

## Meat Cutters—
See *Cutters, Meat.*

## Milk Cans—See *Cans, Milk*

## Mills— Coffee—
Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor ..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. ..... 30%

## Mincing Knives—
See *Knives, Mincing.*

## Molasses Gates—
See *Gates, Molasses.*

## Money Drawers—
See *Drawers, Money.*

## Mowers, Lawn—
*Net prices are generally quoted.*
*Cheap ..... all sizes, $1.80@2.10*
*Good ..... all sizes, $2.50@2.75*

| | *10* | *12* | *14* | *16-inch* |
|---|---|---|---|---|
| *High Grade* | *4.25* | *4.50* | *4.75* | *5.00* |
| Continental | | | | 40&10&5% |
| Great American | | | | 70&5% |
| Great American Ball Bearing | | | | 60&10&5% |
| Quaker City | | | | 70&5% |
| Pennsylvania | | | | 60&10&5% |
| Pennsylvania Golf | | | | 50% |
| Pennsylvania Horse | | | | 40% |
| Pennsylvania Pony | | | | 45% |

Philadelphia:
Styles M., S., C., K., T. ..... 70&5%
Style A, all Steel ..... 65&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list ..... 50&5%

## Nails—
*Cut and Wire. See Trade Report.*
*Wire Nails and Brads, Papered.*
*List July 20, 1899 ..... 85c 10%*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

## Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| A. C. | 25¢ | 23¢ | 22¢ | 21¢ | 21¢ | 40&5% |
| Ausable | 28¢ | 26¢ | 25¢ | 24¢ | 23¢ | 50&10% |
| Capewell | 19¢ | 18¢ | 17¢ | 16¢ | 16¢ | 10&5% |
| C. B. K. | 25¢ | 25¢ | 22¢ | 21¢ | 21¢ | 40% |
| Champ'n | 28¢ | 26¢ | 25¢ | 24¢ | 23¢ | 40&10&5% |
| Clinton | 19¢ | 17¢ | 16¢ | 15¢ | 14¢ | 50&10&5% |
| Maud S. | 25¢ | 23¢ | 22¢ | 21¢ | 21¢ | 50% |
| Neponset | 28¢ | 21¢ | 20¢ | 19¢ | 18¢ | 40% |
| Putnam | 23¢ | 21¢ | 20¢ | 19¢ | 18¢ | 33⅓% |
| Vulcan | 23¢ | 21¢ | 20¢ | 19¢ | 18¢ | 25&10% |

American, Nos. 5 to 16 ₩ lb. ..... 9@9½¢
*Jobbers' special brands, per lb. 8@9c*

## Picture—

| | *1½* | *2* | *2½* | *3* | *3½ in.* |
|---|---|---|---|---|---|
| *Brass Head* | *.55* | *.60* | *.70* | *.95* | *1.00 gro.* |
| *Por. Head* | .. | .. | *1.10* | *1.10* | *1.10 .. gro.* |

## Nippers, See *Pliers and Nippers.*

## Nut Crackers—
See *Crackers, Nut.*

## Nuts—
*Cold Punched* *Off*
*Mfrs. or U. S. Standard. list.*
*Hexagon, plain ..... 5.80c*
*Square, plain ..... 5.40c*
*Square, C. T. & R. ..... 5.60c*
*Hexagon, C. T. & R. ..... 6.30c*
*Hot Pressed:*
*Mfrs., U. S. or Nar. Gauge Stan'd.*
*Square Blank or Tapped ..... 5 60c*
*Hexagon Blank or Tap'd ..... 6.30c*

## Oakum—
*Best or Government ..... lb. 6¼c*
*Navy ..... lb. 5 c*
*U. S. Navy ..... lb. 5¼c*
*Plumbers' Spun Oakum ..... 8¼c*
*In carload lots ¼c lb. off f.o.b. New York.*

## Oil, Axle—
Snow Flake:
1 pt. cans, per doz. ..... $3.00
1 qt. cans, per doz. ..... $4.80
1 gal. cans, per doz. ..... $15 00
5 gal. cans, per doz. ..... $66.00
} 33⅓&10%

## Oil Tanks—See *Tanks, Oil.*

## Oilers—
*Brass and Copper ..... 40&10@50%*
*Tin or Steel ..... 60&10@65%*
*Zinc ..... 60&10@65%*
*Paragon:*
*Brass and Copper ..... 40&10%*
*Tin or Steel ..... 60&10%*
*Zinc ..... 60&10%*
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc, ..... 60@60&10%

## Openers—
Can—
*French ..... doz. 25c*
*Iron Handle ..... doz. 25@27c*
*Sprague, Iron Hdle..per doz. 35@40c*
*Sardine Scissors...doz. $1.75@$3.00*
Tip Top ..... per doz. $0.75
National, ₩ gro. ..... $1.75@$2.00
Stowell's ..... per doz. 35@45¢
Waldorf, ₩ gro. ..... $3.65

Egg—
Nickel Plate ..... per doz., $2.25
Silver Plate ..... per doz., $3.50

## Packing—
*Asbestos Packing, Wick and Rope, 18½@18c lb.*

Rubber—
*Sheet, C. I. ..... 8@10%*
*Sheet, C. O. S. ..... 9@13%*
*Sheet, C. B. S. ..... 10@14%*
*Sheet, Pure Gum ..... 50@70%*
*Sheet, Red ..... 35@40%*
Jenkins' Standard, ₩ lb 80c ..... 25&25&5%

Miscellaneous—
*American Packing ..... 7@10c lb.*
*Cotton Packing ..... 15@11c lb.*
*Italian Packing ..... 9@12½c lb.*
*Jute ..... 3½@4c lb.*
*Russia Packing ..... 7@11c lb.*

## Palls— Creamery
S. S. & Co., with gauges.. No 1 $6.50; No. 2, $5.75 ₩ doz.

Galvanized—
Price per gro.

| | *Quart.* | *10* | *12* | *14* |
|---|---|---|---|---|
| *Water, Regular* | | *18.00* | *$1.00* | *$4.00* |
| *Water, Heavy* | | *$1.00* | *$7.00* | *$9.00* |
| *Fire, Rd. Bottom.* | | *$1.00* | *$3.00* | *$5.00* |
| *Well* | | *$7.00* | *$9.00* | *$1.00* |

## Pans— Dripping—
*Standard List ..... 60c&5@60&10c&5%*

## Fry—
*Common Lipped:*

| *No.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.60* | *.75* | *.85* | *.95* | *1.15* |

## Roasting and Baking—
Regal, S. S. & Co., ₩ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00.
Simplex, ₩ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37 50; 160, $43.00.

## Paper—
Building Paper—

| | |
|---|---|
| *Asbestos:* | *lb.* |
| *Building Felt* | *3c* |
| *Mill Board, sheet, 20 x 40 inches* | *4c* |
| *Mill Board, roll, thicker than 1-16 inch* | *3c* |
| *Mill Board, roll, 1-16 in. thick and less* | *3c* |
| | *Per roll* |
| *Rosin Sized Sheathing:* | *500 sq. ft.* |
| *Light wt., 20 lbs. to roll* | *$0.33* |
| *Medium wt., 30 lbs. to roll* | *$0.47* |
| *Heavy wt., 40 lbs. to roll* | *$0.58* |
| *Medium Grades Water Proof Sheathing* | *$0.65@1.25* |
| *Deafening Felt, 2, 3 and 4½ sq. ft. to lb., ton* | *$36.00@37.00* |
| *Red Rope Roofing, 250 sq. feet per roll* | *$1.65* |

Tarred Paper.
*1 ply (roll 300 sq. ft.), ton..$36 00@37.00*
*2 ply, roll 108 sq. ft. ..... 40@50c*
*3 ply, roll 108 sq. ft. ..... 60@70c*
*Slater's Felt (roll 500 sq. ft.) ..... 50@60c*
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.) ..... $2.75

## Sand and Emery—
*List Dec. 23, 1899 ..... 50c&10@50&10c&10%*

## Parers— Apple—
Advance ..... ₩ doz. $4.50
Baldwin ..... ₩ doz. $5.00
Bonanza ..... each $5.00
Dandy ..... each $7.50
Eureka, 1898 ..... each $16.00
Family Bay State ..... ₩ doz. $12.00
Hudson's Little Star ..... ₩ doz. $4.00
Hudson's Rocking Table ..... ₩ doz $5.50
Improved Bay State ₩ doz. $27.00@30.00
New Lightning ..... ₩ doz. $5.50
Reading 72 ..... ₩ doz. $4.00
Reading 78 ..... ₩ doz. $7.00
Turn Table '98 ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.00

Potato—
Saratoga ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.50

## Pigeons— Clay
Markle's Black Birds, f.o.b. factory, per M ..... $8.75
See also *Traps, Target.*

## Picks and Mattocks—
*List Feb. 23, 1899 ..... 70c&10@70c&10c&5%*

## Pinking Irons—
See *Irons, Pinking.*

## Pins— Escutcheon—
*Brass ..... 60%*
*Iron, list Nov. 11, '85 ..... 60%*

## Pipe, Cast Iron Soil—
*Factory Shipments—Carload lots.*
*Standard, 2-6 in. ..... 65&5%*
*Extra Heavy, 2-6 in. ..... 70&10%*
*Fittings ..... 75&10&5%*
NOTE.—*Freight allowed on Carload lots.*

## Pipe, Merchant, Boiler Tubes, &c.—
*Less than Carloads to Consumers.*

| *Merchant Pipe.* | *Black.* | *Galvanized* |
|---|---|---|
| ⅛ to ½ inch | 61% | 48% |
| ¾ to 10 inch | 68½% | 56% |
| *Boiler Tubes.* | *Up to Steel.* | *22 feet* |
| *1 to 1¾ inch and 2¾ to 5 inch inclusive* | | *65½%* |
| *2 to 2½ inch, inclusive* | | *60%* |
| *6 to 10 inches* | | *59%* |
| *Iron.* | | |
| *1 to 1½ inch and 2½ in.* | | *45½%* |
| *1¾ to 2½ inch* | | *43%* |
| *2¾ to 13 inch* | | *53%* |
| *Casing, Cut Lengths.* | *S. & S.* | |
| *2 to 3 inch* | | *63½%* |
| *3¼ to 4 inch* | | *59%* |
| *4¼ to 12½ inch* | | *61½%* |

NOTE.—*Prices to jobbers are from 5@10% less than above.*

## Pipe, Sewer—
*Standard Pipe and Fittings, 2 to 24 in.*
*New England ..... 70%*
*New York and New Jersey ..... 75%*
*Ohio and Michigan ..... 80%*
*Carload lots are generally delivered.*

## Planes and Plane Irons—
Wood Planes—
*Molding ..... 40@2½@40&10%*
*Bench, First quality ..... 45c&10@45c&10c&5%*
*Bench, Second quality ..... 60c&10@50c&10c&5%*
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10%
Gage Self Setting ..... 35%

Iron Planes—
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons—
*Wood Bench Plane Irons ..... 30c&5@30c&10c&5%*
Buck Bros. ..... 30%
Stanley R. & L. Co... 50&10@50&10&10%
L. & L. J. White ..... 20&5@25%

## Planters, Corn, Hand.
Kohler's Eclipse ..... ₩ doz. $9.00

## Plates—
*Felloe ..... lb. 33½@4c*
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 ..... 30%

## Pliers and Nippers—
*Button Pliers ..... 70c&10@75%*
*Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45*
*Gas Pipe..* 7 8 10 12-in.
*$1.75 $2.00 $2.75 $3.75*
Acme Nippers ..... 50@50&5%
Bernard's:
Parallel Pliers, &c ..... 35%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers ..... 35%
Cronk Hanger Co.:
American Button ..... 75&10%
Cronk's ..... 60%
Improved Button ..... 70&10%
Stub's Pattern ..... 50%
Combination and others ..... 35%
Heller's Farriers' Nippers, Pincers and Tools 50@50&5%
P., S. & W. Tinners' Cutting Nippers ..... 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers ..... 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds ..... 40%

## Plumbs and Levels—
*Plumbs and Levels ..... 75@75&10%*
Davis Iron, Machinist Nos. 1 to 14 ..... 20%
Davis Iron, Adjustable Nos. 6 to 40 ..... 35%
Disston's ..... 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co ..... 70&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension ..... 33⅓&5%

## Poachers, Egg—
Buffalo Steam Egg Poachers, ₩ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

## Points, Glaziers'—
*Bulk and 1 lb. papers.. lb. 8 @ 8¼c*
*¼-lb. papers ..... lb. 8¼@ 8¾c*
*½-lb. papers ..... lb. 8½@ 8¾c*

## Pokes, Animal—
Ft. Madison Hawkeye ..... ₩ doz. $3.25
Ft. Madison, Western ..... ₩ doz. $3.75

## Police Goods—
*Manufacturers' Lists ..... 25@25&5%*
Tower's ..... 25%

## Polish—Metal—
Prestoline Liquid, No. 1 (½ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.75 ..... 40%
Prestoline Paste ..... 40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ lb boxes, ₩ doz. $1.25; 1 lb boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₩ doz. ..... $2.00

## Stove—
Black Eagle Benzine Paste, 5 lb cans ..... ₩ lb 10¢
Black Eagle, Liquid, ½ pt. cans ..... ₩ doz. 75¢
Black Jack Paste, ¾ lb cans, ₩ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₩ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₩ lb 8¢
Fireside ..... ₩ gr. $2.50
Gem, ₩ gr. $4.50 ..... 10%
Japanese ..... ₩ gr. $3.50
Jet Black ..... ₩ gr. $3.50
Peerless Iron Enamel, ¾ pt. cans ..... ₩ doz. $1.50
Wynn's:
Black Silk, 5 lb pail ..... each 70¢
Black Silk, ½ lb box ..... ₩ doz. $1.00
Black Silk, 5 oz. box ..... ₩ doz. $0.75
Black Silk, ¼ pt. liq ..... ₩ doz. $1.00

## Poppers, Corn—
*Round or Square:*
*1 qt. ..... gro. $6.50@$7.00*
*1½ qt. ..... gro. 9 50@ 10 00*
*2 qt. ..... gro. 10.50@ 11.00*

## Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

## Potato Parers—
See *Parers, Potato.*

## Pots— Glue—
*Enameled ..... 45%*
*Tinned ..... 40%*

## Powder—
*In Canisters:*
*Duck, 1 lb. each ..... 45c*
*Fine Sporting, 1 lb. each ..... 75c*
*Rifle, ½-lb. each ..... 15c*
*Rifle, 1-lb. each ..... 25c*
*In Kegs:*
*Duck, 6¼-lb. kegs ..... $2.25*
*Duck, 12½-lb. kegs ..... $4.25*
*Duck, 25-lb kegs ..... $8.00*
*Rifle, 6¼-lb kegs ..... $1.25*
*Rifle, 12½-lb. kegs ..... $2.25*
*Rifle, 25-lb. kegs ..... $4.00*
King's Semi-Smokeless:

| | Shot Gun | Rifle |
|---|---|---|
| Keg (25 lb bulk) | $12 00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17 00 |
| Half case 12 (1 lb cans blk) | 7.25 | 8 75 |

## Presses—
Fruit and Jelly—
Enterprise Mfg. Co. ..... 20@25%

## Pruning Hooks and Shears—See *Shears.*

## Pullers, Nail—
Cyclops ..... 40@40&10%
Diamond B, No. 2, case lots, ₩ doz. $6 00
Diamond B, No. 3, case lots, ₩ doz. $5.50
Giant, No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
Miller's Falls, No. 3, per doz. $12.00 ..... 15&10%
Pelican ₩ doz. $9.00 ..... 40&10%
Scranton, Case Lots:
No. 1 (large), ₩ doz. $4.50; No. 2 (large), $3.75; No 3 (small), $3.00; No. 2-B (large), $3.50; No. 3-B (small), $3.00; No. 2-D (large), $4.50; No 3-D (small) $4 00.

## Pulleys—Single Wheel—

| *Inch.....* | *2* | *2½* | *3* |
|---|---|---|---|
| *Awning ..doz.* | *$0.45* | *.70* | *.95* |
| *Inch.....* | *2* | *2½* | *2½* |
| *Hay Fork, Swivel or Solid Eye ..... doz.* | | | *$1.35@1.50* |
| *Hot House..doz* | *$0.65* | *.90* | *1.20* |
| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
| *Screw.....doz.* | *$0.15* | *.20* | *.25* | *.30* |
| *Inch.....* | *1¾* | *2* | *2¼* | *2¼* |
| *Side.....doz.* | *$0.30* | *.40* | *.55* | *.60* |
| *Inch.....* | *1¼* | *1¾* | *2* | *2¼* |
| *Tackle....doz.* | *$0.30* | *.45* | *.65* | *1.10* |

Stowell's:
Ceiling or End, Anti-Friction ..... 60%
Dumb Waiter, Anti-Friction.. 60&10%
Hay Fork, Anti-Fricton, 5-in. Wheel, ₩ doz. $12.00 ..... 50%
Electric Light ..... 60%
Side, Anti-Friction ..... 60&10%

## Sash Pulleys—
*Common Frame; Square or Round End per doz., 1¾ in., 11c.; 2 in., 17c*
*Auger Mortise, no Face Plate, per doz., 1¾ in., 15c.; 2 in., 18c.*
*Auger Mortise, with Face Plate, per doz., 1¾ in., 16c.; 2 in., 19c.*

Acme.....1¼ in., 16¢; 2 in., 19¢
Common Sense, 1¼ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2¼ in.....
₱ doz. 25¢
No. 9, 1¾ in.....₱ doz. 20¢
Extra for Plated Finish...₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing.....₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in., ₱ doz., 16¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

## Pumps—

*Cistern*.....60@ ...%
*Pitcher Spout*.....75@....%
*Pump Leathers, Lower and Plunger Valves—Per gro.:*

| *Inch..* | 2 | 2¼ | 2½ | 2¾ |
|---|---|---|---|---|
| | $2.20 | 2.50 | 2.75 | 3.00 |
| *Inch..* | 3 | 3¼ | 3½ | 3¾ | 4 |
| | $3.30 | 3.60 | 3.85 | 4.10 | 4.40 |

Barnes Dbl. Acting (low list).....50%
Flint & Walling's Fast Mail (low list).50%
Flint & Walling's Pitcher Spout.....75%
Loud's Suction Pumps, U. S. Co.....20%
Myer's Pumps, low list .....50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....30%

## Punches—

*Revolving (& tubes)...doz. $3.75@4.25*
*Saddlers' or Drive, good..doz. 65@70c*
*Spring, single tube, good quality...*
*$1.65@1.75*
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co.....
35@35&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....60%

## Rail— Barn Door, &c.—

*Barn Door, Light.* ½ ⅝ ¾ ⅞ *In.*
*100 feet.....$2.00 $2.50 $3.00 $3.50*
*B. D., for N. E. Hangers:*

| | *Small.* | *Med.* | *Large.* |
|---|---|---|---|
| *100 feet.....* | *$2.20* | *2.70* | *3.20* |

*Sliding Door, Bronzed Wr't Iron, ft.6¼c*
*Sliding Door, Iron Painted....2½@3c*
*Sliding Door, Wrought Brass, 1½ in.....lb. 36c..30%*
Cronk's Double Braced Steel Rail, ₱ foot.....3½¢
Cronk's O. N. T. Rail.....3½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch...$2.75
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.'.....₱ ft. 4½¢
McKinney's None Better.....₱ ft. 3½¢
McKinney's Standard.....₱ ft. 4 ¢
Stowell's Cast Rail.....1½¢
Stowell's Steel Rail, Plain.....2½¢
Stowell's Wrought Bracket, Plain....3½¢

## Rakes—

*Net Prices, Malleable Rakes:*

| | *10* | *12* | *14* | *16-tooth* |
|---|---|---|---|---|
| *Shank.....* | *$1.50* | *1.60* | *1.75* | *1.85* |
| *Socket....* | *$1.65* | *1.80* | *1.95* | *2.10* |

*Sept. 1, 1900, List:*
*Cast Steel.....70¢&c&2%*
*Malleable.....70¢10@75¢&5%*
*Lawn Rakes, Metal Head, per doz.,*
*20 teeth.....$3.25@3.50*
*24 teeth.....$3.60@3.75*
Fort Madison Red Head Lawn.....$3.25
Fort Madison Blue Head Lawn.....$3.00
Jackson Lawn, 29 and 30 teeth.....
₱ doz. $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.60
Lawn Queen, 24-tooth, ₱ doz.....$3.75
Paragon, 20-tooth, ₱ doz.....$2.85
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$3.00
Malleable Garden, 14-tooth.....
₱ doz. $2.25

## Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5%
McCaffrey File Co. Horse Rasps.....
60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

## Razors—

Boracle.....70%
Fox Razors, No. 42,.. ₱ doz. $20.00 }
Fox Razors, No 44, .. ₱ d z. $24.00 } dis. 40%
Fox Razors, No. 82, Platina, ₱ doz. $24.00
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%
Safety Razors.....40%

## Razor Strops—

See *Strops, Razor.*

## Reels— Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 103P and PN, 202P and PN, 102 PR and PRN, 203 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 3904N, 3904P and PN, 00290¢PN, 0924 and 0924N, 5009N and PN.....40&10%
Shakespeare, Style C.....25%

## Registers—

*Leading Sizes.*

*Black Jap.....60¢10@...%*
*White Jap.....40¢10@50%*
*Bronzed.....40¢10@50%*
*Nickel Plated.....50¢10@60%*
*Electro Plated.....40¢10@50%*
*There is a good deal of irregularity in prices of Registers, and some very low quotations are current on Black Japanned.*

## Revolvers—

*Single Action.....80@85c*
*Double Action.....$1 35*
*Automatic.....$2.75*
*Hammerless.....$3.25*

## Riddles, Grain or Sand—

*16 in. per doz.....$2.00@$2.25*
*17 in. per doz.....$2.25@$2.50*
*18 in. per doz.....$2.50@$2 75*

## Rings and Ringers—

### Bull Rings—

| | *2* | *2½* | *3 Inch* |
|---|---|---|---|
| *Steel.....* | *$0 80* | *0.90* | *0.95 doz.* |
| *Copper.....* | *1.10* | *1.30* | *1.50 doz* |

### Hog Rings and Ringers—

*Hill's Rings....gro. boxes, $4.50@4.75*
*Hill's Ringers, Gray Iron.doz. 55@60c*
*Hill's Ringers, Mal. Iron, per doz 75@80c*
*Blair's Rings.....per gro. $5.75@6.00*
*Blair's Ringers...per doz. $0.65@ .70*
*Brown's Rings....per gro. $6.00@6.25*
*Brown's Ringers..per doz. $1.00@1.10*
Rapid Rings.....₱ gro. $6.00
Rapid Ringers.....₱ doz. $0.50

## Rivets and Burrs—

*Copper*.....50@50&5%
*Iron or Steel:*
*Tinners'*.....70@70¢10%
*Miscellaneous*.....70@70¢10%

## Rivet Sets—See *Sets.*

## Roasting and Baking Pans—See *Pans, Roasting and Baking.*

## Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....50&10&10%
Cronk's Stay.....60&5%
Cronk's Brinkerhoff.....60%
Lane's Stay.....33⅓%
Stowell's Barn Door Stay...₱ doz. $1.25

## Rope—

*Manila, 7-16 in. and larger*
*lb.* 9½@10½¢
*Manila.....¾-inch.....lb. 10 @10½¢*
*Manila ¼ & 5-16 in.....lb. 10½@11 ¢*
*Manila, Tarred Rope, 15 thread..*.....*lb.* 9½@10½¢
*Manila Hay Rope.*
*Medium*.....*lb.* 9½@10½¢
*Sisal, 7-16 in. and larger lb.* 7 @ 7½¢
*Sisal.....⅜-inch..lb.* 7½@ 7¾¢
*Sisal, ¼ and 5-16 in.....lb.* 8 @ 8½¢
*Sisal, Hay Rope, 2 to 10 ply*.....*lb.* 7 @ 7½¢
*Sisal, Tarred, Medium Lath Yarn*.....*lb.* 6½@ 6¾¢
*Cotton Rope:*
*Best.....¼-in. and larger lb.* 14 ¢
*Medium ....¼-in. and larger lb.* 11½¢
*Com.....¼-in. and larger lb.* 9 ¢
*Jute Rope, No. 1, ¼ in. and up*.....*lb.* 6½¢
*Jute Rope, No. 2, ¼-in. and up*.....*lb.* 6 ¢
*¼c less in good lots.*

## Wire Rope—

*Galvanized*.....25¢7½&...%
*Plain*.....30¢7½&...%

## Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60&5

## Rules—

*Boxwood...75¢10¢10¢10¢10@75¢10¢10¢10¢10¢10&5%*
*Ivory...40¢10¢10@40¢10¢10¢10¢10%*
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Stanley R. & L. Co.:
Boxwood...75&10&10@75&10&10&10%
Ivory.....35&10@35&10&10%

## Sad Irons—See *Irons, Sad.*

## Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

## Sash Cords—See *Cord, Sash.*

## Sash Locks—See *Locks, Sash.*

## Sash Weights—

See *Weights, Sash.*

## Sausage Stuffers or Fillers—See *Stuffers or Fillers Sausage.*

## Saw Frames—

See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—

Atkins:
Circular.....50@50&10%
Band.....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50&10%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Disston's:
Circular Solid and Inserted Tooth.50%
Band 2 to 14 in. wide.....60%
Band ¼ to 1¾.....70%
Crosscuts.....45@45&10%
Narrow Crosscuts.....50@50&10%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35@35&7½%
Woodsaw Blades.....40@40&7½%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 18, d100, D8, 120, 79, 77, 8.....25@25&7½%
Hand Saws, Nos 7 ,07, 107½, 3, 1, 0, 00, Combination.....30@30&7½%
Compass, Keyhole, &c.....25@25&7½%
Butcher Saws and Blades..35@35&7½%
C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....35%
Compass and Key Hole Saws.....25%
Framed Wood Saws.....40%
Hand Saws.....35@30%
Wood Saw Blades.....45%
Peace:
Circular and Mill.....50%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....50%
Richardson:
Circular and Mill.....50%
Hand, &c.....30%
X Cuts, list Jan. 1, '99.....50%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Compass, Keyhole, &c .....25@25&7½%
Wood Saws .....35@35&7½%

## Hack Saws—

Disston:
Concave Blades.....35%
Keystone.....30%
Hack Saw Frames.....30%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames .....45%
Griffin's Hack Saw Blades.....45%
Star Hack Saws and Blades.....15&10%

## Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

## Scale Beams—

See *Beams, Scale.*

## Scales—

*Family, Turnbull's*.....30@30¢10%
*Counter:*
*Hatch, Platform, ¼ oz to 100 lbs. doz $5.50*
*Two Platforms, ¼ oz to 8 lbs. ..... doz. $16 00*
*Union Platform, Plain..$1.70@1.90*
*Union Platform, Striped $1.85@2.15*
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.....50%
"The Standard" Portables.....45%
"The Standard" R. R. and Wagon....50%

## Scrapers—

*Box, 1 Handle*.....*doz $2.25@2.50*
*Box, 2 Handle*.....*doz. $3.75@4.00*
*Ship, No. 1, doz. $2.50; No. 2, $2.25@2.40*
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%

## Screens, Window, and Frames—

Bonanza Window Screens.....60@60&5%
Fiver Pattern Window Screen.60@60&5%
MaineWindow Screen Frames.40&10&5%
Perfection Window Screens.....60@60&5%
Phillips' Window Screen Frames.....
60&10&5%
Porter's Hummer Window Screens..
60@60&5%
Porter's Klondike Window Screens.....
60&2½@60&7½%
Wabash Spring Adj. Screen.....50%
See also *Doors.*

## Screw Drivers—

See *Drivers, Screw.*

## Screws—Bench and Hand—

*Bench, Iron..doz. 1 in., $3.00@3.25; 1¼, $3.50@3.75; 1½, $4.00@4.50*
*Bench, Wood, Beech..doz. $3.50@3.75*
*Hand, Wood*.....*80&5@40%*
Hand, R. Bliss Mfg Co .....35%

## Coach, Lag and Hand Rail—

*Lag, Common Point, list Oct. 1, '99*.....*75¢15@...%*
*Coach and Lag, Gimlet Point, list Oct. 1, '99*.....*75¢10@...%*
*Hand Rail, list Jan. 1, '81.60¢10@...%*

## Jack Screws—

*Standard List*.....75@75¢10%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50&50&5%
Sargent.....70&10%

## Machine—

*List Jan. 1, '98.*
*Flat or Round Head, Iron.50@50¢10%*
*Flat or Round Head, Brass*.....
*50@50¢10%*

## Set and Cap—

*Set (Iron or Steel)*.....70¢10%
*Sq. Hd. Cap*.....65¢10%
*Hex. Hd. Cap*.....65¢10%

## Wood—

*List Jan. 1, 1900.*
*Manufacturers' printed discounts:*
*Flat Head, Iron*.....87½@90%
*Round Head, Iron*.....85@87½%
*Flat Head, Brass*.....85@87½%
*Round Head, Brass*.....83½@85%
*Flat Head, Bronze*.....75@80%
*Round Head, Bronze*.....73½@77½%
*Drive Screws*.....87½@90%

## Scroll Saws—See *Saws, Scroll.*

## Scythes—

*Grass Scythes:*
*Natural Finish.....per doz. $7.25*
*Polished Blade.....per doz. $7.75*
*Painted or Bronzed..per doz. $7.50*
*Weed and Bush..per doz. $7.25@7.50*

## Scythe Snaths—

See *Snaths, Scythe.*

## Seeders— Raisin—

Enterprise.....25@30%

## Sets— Awl and Tool—

*Brad Awl and Tool Sets:*
*Wood Hdle., 10 Awls doz. $2.00@2.25*
*Wood Hdle., 14 Awls, 6 Tools..... doz. $2.50@2.60*
Aikens Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls.... Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....30&10@30&10&10%

## Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.....
₱ doz.....$9.00

## Nail—

*Square*.....*per gro. $2.50*
*Round, Blk. and Pol., assorted.....gro. $1.80@2.50*
*Octagon*.....*gro. $4.25@4.75*
*Knurled, Good.... ...gro. $6.00@6.50*
Buck Brothers.....37½%
Cannon's Diamond Point, ₱ gr. $13..25%
Mayhew's.....per gro. $2.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro. $7.50

## Rivet—

*Regular list*.....70@70¢10¢5%

## Saw—

Aikens:
Genuine.....₱ doz. $5.50@6.00
Imitation .....₱ doz. $3.00@3.10
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....20%
Spring Hammer.....60%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00.....
50&20&5%
No. 5, Mill, $31.00.....50&20& 0%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18 .....60%

## Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%
Smith & Hemenway Co .....70&5%
Tanite Mills ₱ gross, $14.40....25@33⅓%

## Sharpeners, Skate—

Eureka Skate Sharpener.....₱ doz. $2.00

## Shaves, Spoke—

*Iron*.....*doz. $1 00@1.25*
*Wood*.....*doz. $1.75@2.00*
Bailey's (Stanley R. & L. Co ).....50&10%
Goodell's, ₱ doz. $9.00.....10&10%

## Shears—

| *Cast Iron...* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best .....* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good.....* | *$13.00* | *15.00* | *17 00 gro.* |
| *Cheap.... * | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality, Jap*.....70@70¢10%
*" Nickel*.....*60@60¢10%*
*Fair qual. Jap*.....*80@80¢5%*
*" Nickel*.....*75@75¢10%*
*Tailors' Shears*.....*40@40¢10%*
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....1900 list, 50%

## Tinners' Snips—

*Steel Blades*.....*20¢10%*
*Steel Laid Blades*.....*40¢10%*
Forged Handles, Steel Blades, Berlin..
40@40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch.....50%
Niagara Snips.....40%
P. S. & W. Co.....20%

## Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....35@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 .....35@25&10%
John T. Henry Mfg. Company:
Pruning Shears, all grades..40@40&5%
Orange Shears.....50&10@50&20%
Grape.....40&10@50%
Tree Pruners.....75%
Nagley's Pruning Shears.....10&5%
P., S. & W. Co.....33⅓%

## Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 75&10&10%
Reading.....70&10@75%
R. & E. list.....33⅓%
Wrightsville, Hatfield Pattern.....80%

## Sliding Shutter—

Reading list.....70&10@75%
R. & E. list.....33⅓%
Sargent's list.....50&10&10%

## Shells— Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge, 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge.....15%
Climax, Club, League, Rival, 14, 16 and 20 gauge ($7.50 list).....20&5%
Climax, Club, League, Rival 10 and 12 gauge.....25&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12, 16 and 20 gauge.....15%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....33⅓&10&5%

## Shells, Loaded—

*Loaded with Black Powder.....40¢5%*
*Loaded with Smokeless Powder, medium grade.....40¢10¢5%*
*Loaded with Smokeless Powder, high grade.....40¢10¢10¢5%*

## Shoes, Horse, Mule, &c.—

*F. o. b., Pittsburg.*

*Iron*.....*per keg $3.50*
*Steel*.....*per keg 3.25*
Burden's, all sizes, ₱ keg.....$3.60

## Shot—

*Drop, up to B, 25-lb. bag....$1.45@1.50*
*Drop, B and larger, per 25-lb. bag..*
*$1.70@1.75*
*Buck, 25-lb. bag*.....*$1.70@1.75*
*Chilled, 25 lb. bag*.....*$1.70@1.75*
*Dust Shot, 25-lb. bag*.....*$2.00*
Markle's Chilled.....$1.75
Tatham's Chilled.....$1.75
NOTE.—*There is some irregularity in prices because jobbers often undersell the manufacturers.*

## Shovels and Spades—

*No. 2, Polished, Sq. or Ed. Point, D or L Handle:*

| | *A1,* *1st Grade.* | *B2,* *2d Grade* |
|---|---|---|
| *Plain Back....* | *$10 50* | *$9 60* |
| *Strap Back....* | *9.90* | *9.00* |
| *Cleveland Pat'n* | *10.50* | *9.50* |

| | *C3,* *3d Grade.* | *D4,* *4th Grade* |
|---|---|---|
| *Plain Back....* | *$8.70* | *$8.10* |
| *Strap Back....* | *8.10* | *7.50* |
| *Cleveland Pat'n* | *8.40* | *7.80* |

*All other sizes add 30c doz.*
*Black deduct 30c doz.*
*Note.—The above are the regular Association prices to small retailers, but are*

*often shaded by jobbers $0.50@1.00, and Common, Plain Back Shovels are generally sold by jobbers at $6.75.*

### Sieves and Sifters—

*Hunter's Imitation...gro. $9.50@10.00*

Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

| 14&16 | 16&18 | 18&20 |
|---|---|---|
| $12.90 | $13.80 | $15.00 |

F. J. Meyers' Mfg. Co.:

Eclipse.....₱ gr. $9.25
Excelsior.....₱ gr. $10.35
Hunter's Genuine.....₱ gr. $12.50
No Name, Hunter's.....₱ gr. $11.50
Standard.....₱ gr. $10.35
Shaker (Barler's Pat.) Flour Sifters. ₱ doz., $2.00.....10%

### Sieves, Tin Rim—

*Per dozen*

| Mesh | 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| *Black, full size* | $0.95 | .98 | 1.00 | 1.10 |
| *Plated, full size* | $1.05 | 1.08 | 1.10 | 1.20 |
| *Black, scant* | $0.78 | .80 | | .85 |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*

*Mesh 18, Nested, doz.....$0.65@0.75*
*Mesh 20, Nested, doz.....75@ .85*
*Mesh 24, Nested, doz.....90@1.00*

### Sinks—

#### Cast Iron—

*Standard list.....65@65&10%*

NOTE.—*There is not entire uniformity lists used by jobbers.*

#### Wrought Steel—

New Era, Galv'd and Enameled...70&5%
New Era, Painted.....50&10%
L. & G. Mfg. Co., Galvanized.....50%
L. & G. Mfg. Co. Enameled.....50%

### Skeins, Wagon—

*Cast Iron.....70&10@75%*
*Malleable Iron.....40&10@50%*
*Steel.....40@10&10%*

### Slates—

*Factory Shipments.*

*"D" Slates.....50&10&10&10%*
*Unexcelled, etc., Noiseless Slates..60 & 8 tens %*
*Victoria, etc., Noiseless Slates..60& 7 tens &5%*
*Wire Bound.....50&10&5%*
*Web Hinge.....5%*

### Slaw Cutters—See *Cutters.*

### Slicers, Vegetable—

Sterling $2.00.....33⅓

### Snaps, Harness—

*German.....40@10&10%*

Covert Mfg. Co.:

Deroy.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%
Yankee.....35&2%
Yankee, Roller.....30&2%

Covert's Saddlery Works:

Crown.....60%
German.....60%
Model.....60%
Triumph.....60%

W. & E. T. Fitch Co.:

Bristol.....40&10%
Empire.....50&5%
German.....40%
National.....50&5%
Perfect.....45%
Clipper.....50&5%
Champion.....40%
Security.....40%
Victor.....60&5%

Oneida Community:

Solid Steel.....65@65& 0%
Solid Swivel.....65&10@65&10&10%

Sargent's Patent Guarded.....60⅔&10%

### Snaths—

*Scythe.....45&5&5%*

### Snips, Tinners'—See *Shears*

### Soldering Irons—

See *Irons, Soldering.*

### Spoke Trimmers—

See *Trimmers, Spoke.*

### Spoons and Forks—Silver Plated—

*Good Quality.....50&10@60&10&5%*
*Cheap.....40@45&10%*

International Silver Co.:

1847 Rogers Bros.....40&10%
Rogers & Bro., William Rogers Eagle Brand, and Rogers & Hamilton.50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Simeon L. & Geo. H. Rogers Co.:

Silver Plated Flat Ware.....60%
No. 77 Silver Plated Ware.....60&10%

### Miscellaneous—

*German Silver.....60&10@60&10&10%*

Simeon L. & Geo. H. Rogers Co.:

German or Nickel Silver, Special list 1 & 10%

### Tinned Iron—

*Teas.....per gro. 45@55c*
*Tables.....per gro. 90c@$1.00*

### Springs—

#### Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Victor (Coil).....50&10&10%

### Carriage, Wagon, &c.

*1¼ in. and Wider:*

*Black or ⅛ Bright, lb.....5c*
*Bright, lb.....5½c*

*Painted Seat Springs:*

*1½ x 2 x 26 and smaller, per pr..50c*
*1½ x 2 x 28 per pr.....55c*
*1½ x 3 x 28 and narrower, per pr.75c*

### Sprinklers, Lawn—

Enterprise.....25@20%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

### Squares—

*Nickel plated....* } *List Jan. 5, 1900*
*Steel and Iron....* }
*Rosewood Hdl Try Square and T-Bevels.....70&10@75%*
*Iron Hdl. Try Squares and T-Bevels. 60&10@60&10&10%*

Disston's Try Sq. and T-Bevels.....60&10%
Winterbottom's Try and Miter.....50&10%

### Squeezers—

#### Lemon—

*Wood, Common, gro., No. 2. $5.25 @$5.50; No. 1, $6.25@$6.50.*
*Wood, Porcelain Lined:*
*Cheap.....doz. $2.40@2.75*
*Good Grade.....doz. $3.00@3.50*
*Tinned Iron.....doz. $0.75@1.25*
*Iron, Porcelain Lined doz. $2.90@3.25*
Jennings' Star.....₱ doz. $1.85@1.90

### Staples—

*Barbed Blind.....lb. 7@7¼c*
*Electricians', Association list.....80&10&10&10%*
*Fence Staples, same price as Barbed Wire. See Trade Report.*
*Poultry Netting, Staples....per lb..5½@5¾c*

Grand Crossing Tack Co.'s list....80&10%

### Steels, Butchers'—

Dick's.....20%
Foster Bros'.....30%
Hartzell Cutlery Co.....40&5%
C. & A. Hoffmann's.....40%

### Steelyards.....25@25&10%

### Stocks and Dies—

*Blacksmiths'.....40@40&10%*
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

### Stone—

#### Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 inch, $3.00 per gro., 12 inch, $10.80
Pike Mfg. Co. 1901 list:
Black Diamond S. S....₱ gro. $12.00
Lamoille S. S.....₱ gro. $11.00
White Mountain S. S....₱ gro. $9.60
Green Mountain S. S....₱ gro. $6.00
Extra Indian Pond S. S.₱ gro. $7.50
No. 1 Indian Pond S. S..₱ gro. $7.00
No. 2 Indian Pond S. S..₱ gro. $4.50
Leader Red End S. S....₱ gro $4.50
Balance of 1901 list 33⅓%

### Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.....50%
Gem Corundum Axe, Single or Double Grit.....55%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones.....33⅓

Pike Mfg. Co. 1901 list:

| | |
|---|---|
| Arkansas Stone, No. 1, 3 to 5 in. | $2.50 |
| Arkansas Stone, No. 1, 5½ to 8 in. | $3.50 |
| Arkansas Slips No. 1..... | $4.00 |
| Lily White Washita 4 to 8 in..... | 60¢ |
| Rosy Red Washita 4 to 8 in..... | 60¢ |
| Washita Stone, Extra, 4 to 8 in. | 50¢ |
| Washita Stone, No. 1, 4 to 8 in. | 40¢ |
| Washita Stone, No. 2, 4 to 8 in. | 30¢ |
| Lily White Slips..... | 90¢ |
| Rosy Red Slips..... | 90¢ |
| Washita Slips, Extra..... | 80¢ |
| Washita Slips, No. 1..... | 70¢ |

33⅓%

India Oil Stones (entire list).....25%

| | |
|---|---|
| Hindostan No. 1, Regular.... | ₱ lb 8¢ |
| Hindostan No. 1 Small..... | ₱ lb 10¢ |

33⅓%

| | |
|---|---|
| Axe Stones (all kinds)..... | 33⅓% |
| Turkey Oil Stones, ex. 5 to 8 in. | ₱ lb 80¢ |
| Queer Creek Stones, 4 to 8 in.... | 20¢ |
| Queer Creek Slips..... | 90¢ |
| Sand Stone..... | 5¢@40¢ |

Belgian, German and Swaty Razor Hones.....40%

Natural Grit Carving Knife Hones, ₱ doz.....$3.00

Quick Edge Pocket Knife Hones, ₱ doz.....$2.00

Mounted Kitchen Sand Stone, ₱ doz.....$1.80

80⅔%

Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

### Stoners—

#### Cherry—

Enterprise.....25@30%

### Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00...50&10%
Morrill's, No. 2, $11.00.....50&10%

### Stops, Window—

Ives' Patent.....25&5%

### Stove Boards—

See *Boards, Stove.*

### Stove Polish—See *Polish, Stove.*

### Strainers, Pump—

Diamond Joe Pump Strainers..per doz. 75¢

### Straps, Box—

Cary's Universal case lots.....20&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points...doz. 55@65c*
*Socket.....doz. $1.75*

### Strops, Razor—

Smith & Hemenway Co.....70%

### Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

## Tacks Brads, &c.—

*List Jan. 15, '99.*

*Carpet Tacks, American 90@20@....%*
*American Cut Tacks....90@20@....%*
*Swedes Iron Tacks.....90@20@....%*
*Swedes Upholsterers' Tacks.....90@40@....%*
*Gimp Tacks.....90@40@....%*
*Lace Tacks.....90@40@....%*
*Trimmers' Tacks.....90@20@....%*
*Looking Glass Tacks.....70@10%*
*Bill Posters' and Railroad Tack....90@50@....%*
*Hungarian Nails.....80@15%*
*Common and Patent Brads....80@10%*
*Trunk and Clout Nails.....80&10%*

NOTE.—*The above prices are for "Straight Weights." An extra 5% is given "Star Weights" and an extra 10&5% on "Standard Weights."*

### Miscellaneous—

*Double Point Tacks.....90@60 or 7 tens*
*Steel Wire Brads, R. & E. Mfg. Co.'s list.....50@10@60%*

See also *Nails, Wire.*

### Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.20
Emerald, S. S. & Co.....60-gal., $4 00
Queen City S. S. & Co., 30-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

### Tapes, Measuring—

*American Asses' Skin.....40@10@50%*
*Patent Leather.....25@50@5%*
*Steel.....40@40@5%*
*Chesterman's.....25@25@5%*
Eddy's Steel.....40@40&5%
Eddy's Metallic.....33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30&5%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, base per lb.....2¼c*

### Thermometers—

*Tin Case.....80¢10@80¢10¢5%*

### Ties, Bale—Steel.

*Standard Wire.....50¢10¢5%*

### Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6½ in. ₱ 1000..$10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000..$11.00
Galv. Steel 5-32 x 11¼ in. ₱ 000 $12.00
Galv. Steel 5-32 x 15¼ in. ₱ 1000 $14.00

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

### Tobacco Cutters—

See *Cutters, Tobacco.*

### Tools—Coopers'—

L. & I. J. White.....20@20&5%

#### Saw—

Atkins' Cross Cut Saw Tools.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

#### Ship—

L. & I. J. White.....25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme.....doz. $1.15@1.35; gro. $10.50@11.00*
*Harper, Champion or Paragon...doz. $1.25@1.40; gro. $12.00@12 50*

#### Game—

*Oneida Pattern.....75&5@75&10¢5%*
Newhouse.....45@45&5%
Hawley & Norton.....65&5@65&10%
Victor (Oneida Pattern).....75@75&5%
Star (Blake Pattern).....65&10@70&5%

#### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes.....8½@9c*
*Mouse, Round or Square Wire.....doz. $0.85@1.00*

American Pattern French Rat and Mouse Traps—
No. 1, Detroit Marty Pattern, ₱ doz. $4.50; in ¼ gro. lots, ₱ doz.....$4.00
No. 2, Detroit Marty Pattern, ₱ doz. $3.25; in ¼ gro. lots, ₱ doz.....$3.00
Detroit Marty Pattern Mouse, ₱ doz. $2.00; in ¼ gro. lots, ₱ doz.....$1.75
Diamond Joe Mouse Traps....per doz. 60¢
Diamond Joe Rat Traps.....per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00.....50%

#### Target—

Markle's, each.....$5.50

### Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40%

### Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Never-Break Steel Garden Trowels...gro. $7.00
Peace's Plastering.....30%
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Plastering.....25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....50%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.50
Model Stove Trucks.....₱ doz. $18.50

### Tubs, Wash—

| | No. 1 | 2 | 3 |
|---|---|---|---|
| *Galvanized, per doz.* | *$5.00* | *5 50* | *6.00* |

Galvanized Wash Tubs (S. S. & Co.):

| | No. 1 | 2 | 3 | 10 | 20 | 30 |
|---|---|---|---|---|---|---|
| Per doz | $5 25 | 6.00 | 6.75 | 6.50 | 7 25 | 8.00 |

### Twine—

#### Miscellaneous—

| *Flax Twine—* | *BC* | *B.* |
|---|---|---|
| *No. 9, ¼ and ½-lb. Balls..* | *22c* | *24c* |
| *No. 12, ¼ and ½-lb. balls..* | *18c* | *20c* |
| *No. 18, ¼ and ½-lb. Balls..* | *16c* | *18c* |
| *No. 24, ¼ and ½-lb. Balls* | *15½c* | *17½c* |
| *No. 36, ¼ and ½-lb. Balls..* | *15c* | *17c* |
| *Chalk Line, Cotton, ½-lb. Balls....* | | *22@22½c* |
| *Cotton Mops, 6, 9, 12 and 15 lb. to doz.....* | | *7@8c* |
| *Cotton Wrapping, 5 Balls to lb according to quality...10½c@17c* | | |
| *American 2-Ply Hemp, ¼ and ½-lb. Balls.....* | | *12@13c* |
| *American 3 Ply Hemp, 1-lb. Balls..* | | *12@13c* |
| *India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....* | | *8½c* |
| *India 3-Ply Hemp, 1-lb. Balls....* | | *8½c* |
| *India 3-Ply Hemp, 1½-lb. Balls....* | | *7c* |
| *2, 3, 4 and 5-Ply Jute, ½-lb. Balls..* | | *9½@10c* |
| *Mason Line, Linen, ½-lb. Balls...* | | *45c* |
| *No. 2½ Mattress, ¼ and ½-lb. Balls..* | | *8c* |
| *Wool.....* | | *7c* |

## Vises—

*Solid Box.....50@50&10%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Bonney's.....40%
Fisher & Norris Double Screw....15&10%
Hollands':
Machinists'.....40%
Keystone.....65&5%
Lewis Tool Co.....20&10%
Massey's Perfect.....15&10%
Massey's:
Clincher.....30&40%
Combination, Quick Adj.....40%
Woodworker's.....15&10%
Merrill's.....30%
Miller's Falls.....50&10&10%
Parker's:
Victor.....30&25%
Regulars.....30&25%
Vulcan's.....40&45%
Combination Pipe.....55&60%
Prentiss.....30&25%
Sargent's.....40%
Snediker's X. L.....30&25%
Stephens'.....30&25%
Columbian Hdw. Co.....40%

### Saw Filers—

Bonney's, No. 1, $13; No. 3, $16.....30%
Disston's D 3 Clamp and Guide, ₱ doz. $30.....25%
Reading.....30%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....45&50%

### Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....30%

Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

## Wads—Price Per M.

| | |
|---|---|
| *B. E., 11 up* | *80c* |
| *B. E., 9 and 10* | *70c* |
| *B. E., 8* | *80c* |
| *B. E., 7* | *80c* |
| *P. E., 11 up* | *$1.00* |
| *P. E., 9 and 10* | *1.25* |
| *P. E., 8* | *1.50* |
| *P. E., 7* | *1.50* |
| *Ely's B. E., 11 and larger* | *$1.70@1.75* |
| *Ely's P. E., 12 to 20* | *$3.00@3.25* |

*Dry Paper*

### Wagon Jacks—

See *Jacks, Wagon.*

### Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

#### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Ground.....65%*
*Unground.....70%*
*White Enameled Ware:*
*Maslin Kettles.....75¢10¢5@80%*
*Covered Ware:*
*Tinned and Turned.....40¢10@40¢10¢5%*
*Enameled and Plain.....50@50¢10¢5%*

See also *Pots, Glue.*

#### Enameled—

Agate Nickel Steel Ware, list July '99. 33⅓&10%
L. & G. Opal Enameled Ware.....65%
Iron Clad Ware.....70&10%
Never Break Enameled....50&5@50&10%

#### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45c* | *50c* | *55c* | *65c* |

#### Steel Hollow Ware.

Avery Spiders & Griddles.....65@65&5%
Avery Kettles.....50%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles.....65&5%
Never Break Kettles.....60%
Solid Steel Spiders & Griddles.....65&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled.....50&5%

### Washboards—

| Solid Zinc: | ₱ doz |
|---|---|
| Crescent, family size, bent frame. | $3.00 |
| Red Star, family size, stationary protector..... | $3.00 |

Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.65
Cable Cross, family size, stationary protector.....$2.90

Single Zinc Surface:
Salad, family size, open back perforated.....$2.40
Saginaw Globe, protector, family size, ventilated back.....$2.25

Brass Surface:
Brass King, Single Surface, open back ..... $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface ..... $3.00

**Washers—**
**Leather, Axle—**
Solid ..... 35@35&10%
Patent ..... 35&10@35&20%
Coil: ⅜ 1 1⅛ 1¼ Inch.
10c 11c 13c 15c per 100

**Iron or Steel—**
Stove bolt .... 5-16 ⅜ ½ ⅝ ¾
Washers .... $3.10 4.20 2.90 2.70 2.50
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

**Cast Washers—**
Over ½ inch, barrel lots, per lb. .... 1¼@1¾c

**Washer Cutters—**
See *Cutters, Washer.*

**Washing Machines—**
See *Machines, Washing.*

**Water Coolers—**
See *Coolers, Water.*

**Wedges—**
Oil Finish ..... lb. 2.90@3.10c

**Weights, Sash**
Per ton, f.o.b. factory .... $19.00@22.50

*Some Foundries make price $1@$2 lower.*

**Well Buckets, Galvanized**
See *Pails, Galvanized.*

**Wheels Well—**
8-in., $1.50@1.75; 10-in., $1.80@2.10; 12-in., $2.35@2.75; 14-in., $3.75@4.65

**Wire and Wire Goods—**
*Bright and Annealed:*
6 to 9 ..... 75½c5@75½&10%
10 to 18 ..... 75½&10@75½&10&5%
19 to 26 ..... 75c&10c@75c&10&5%
27 to 36 ..... 75c&10c@75½&10&5%
*Galvanized:*
6 to 18 ..... 70@70&5%
19 to 26 ..... 75½&5@75½&10%
27 to 36 ..... 75½&10@75½&10&5%
*Copperized:*
6 to 9 ..... 70c5@70c&10%
10 to 18 ..... 70c&10@70c&10&5%
19 to 26 ..... 75c&10@75c&10&5%
27 to 36 ..... 75c&10@75c&10&5%
*Tinned:*
6 to 14 ..... 75@75c&10%
15 to 18 ..... 72½c@75%
19 to 26 ..... 70c5@70&5&5%
27 to 36 ..... 70@70&5%
*Annealed Wire on Spools* .. 70c5@70 &10%

*Brass and Copper Wire on Spools* .. 60&5@60&10%
*Brass, list Feb. 28, '96* ..... 35%
*Copper, list Feb. 28, '96* ..... 15%
*Cast Steel Wire* ..... 50%
*Stubs' Steel Wire* ..... $6.00 to 2. 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

**Bright Wire Goods—**
*List April 1, 1901* ..... 85&10@ ..%

**Wire Cloth and Netting—**
*Galvanized Wire Netting* .. 35@35&5%
*Painted Screen Cloth, per 100 ft* .... $1.00@1.10

*Light Hardware Grade:*
*8-18 Mesh, Plain (8c. list) sq. ft.* .. 1¼@1¾c
*8-18 Mesh, Galv. (8c. list) sq. ft.* .. 2¼@2¾c

**Wire, Barb**—See *Trade Report.*
**Wire Rope**—See *Rope, Wire.*

**Wrenches—**
*Agricultural* ..... 70&10@75&5%
*Case lots* ..... 75&10%
Acme ..... 60&10%
Alligator ..... 70%
Baxter's S ..... 60&10%
Bull Dog ..... 70%
Bemis & Call's:
Adjustable S ..... 35&5%
Adjustable S Pipe ..... 40%
Brigg's Pattern ..... 30&10%
Combination Black ..... 40&5%
Combination Bright ..... 40%
Cylinder or Gas Pipe ..... 55%
Extra Heavy ..... 45%
Merrick's Pattern ..... 50%
No. 3 Pipe, Bright ..... 55%
Bindley Automatic ..... 30%
Boardman's ..... 33⅓%
Coes' Genuine ..... 40&10&5&5%
Coes' "Mechanics" ..... 40&10&10&5&5%
Donohue's Engineer ..... 40&10%
Eagle ..... 50&10%
Gem Pocket ..... 30%
Hercules ..... 70%
Knife Handle, Machinists' (W. & B.):
Case lots ..... 50&10%
Less than case lots ..... 50&5%
Improved Pipe (W. & B.) ..... 60%
Solid Handles, P. S. & W. ..... 50@50&10%
Triumph ..... 60&10%

**Wrought Goods—**
*Staples, Hooks, &c., list March 17 '92* ..... 85&25@ 0%

**Yokes, Neck—**
Covert Saddlery Works, Trimmed .. 60&5%
Covert Saddlery Works, Neck Yoke Centers ..... 70%

**Yokes, Ox, and Ox Bows—**
Fort Madison's Farmers & Freighters' .. list net

**Zinc—**
*Sheet* ..... lb 6½c@6¾c

# PAINTS, OILS AND COLORS—Wholesale Prices.

## White Lead, Zinc, &c.

Lead, Foreign white, in Oil .. 7¼@ 9¾
Lead, American White, in Oil:
Lots of 500 ℔ or over .. @ 6¼
Lots less than 500 ℔ .. @ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price .. @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price .. @ 1½
Lead White, Dry in bbls .. 5¾@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry .. ℔ ℔ 4¾@ 4¾
Zinc, Paris, Red Seal, dry .. @ 8½
Zinc, Paris, Green Seal, dry .. @ 9¼
Zinc, Antwerp Red Seal, dry .. @ 6¼
Zinc, Antwerp, Green seal, dry .. @ 7¾
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over .. 12 @12¼
Lots of less than 1 ton .. 12¼@12¾
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over .. 10¾@11¼
Lots of less than 1 ton .. 11@11½
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

## Dry Colors.

Black, Carbon ..... ℔ ℔ 8 @20
Black, Drop, Amer ..... 4 @ 7
Black, Drop, Eng ..... 7 @11
Black, Ivory ..... 12 @21
Lamp, Com ..... 4½@ 6
Blue, Celestial ..... ℔ ℔ 4 @ 6
Blue, Chinese ..... 30 @35
Blue, Prussian ..... 28 @34
Blue, Ultramarine ..... 4 @20
Brown, Spanish ..... ½@ 1
Brown, Vandyke, Amer ..... 1¾@ 2½
Brown, Vandyke, Foreign ..... 2½@ 3½
Carmine, No. 40 ..... ℔ ℔ 2.05@2.75
Green, Chrome, ordinary ..... 5 @ 6½
Green, Chrome, pure ..... 16 @20
Lead, ited, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6
Lots less than 500 ℔ ..... @ 6½
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6
Lots less than 500 ℔ ..... @ 6½
Ocher, French Washed ..... 1½@ 1¾
Ocher, Dutch Washed ..... 4½@ 5
Ocher, American ... ℔ ton $10.00@15.00
Orange Mineral, English .. ℔ ℔ 8½@11¼
Orange Mineral, French .... 11 3-16@11¼
Orange Mineral, German ..... 8½@ 9½
Orange Mineral, American .... 8 @ 8½
Red, Indian, English ..... 4½@ 8½
Red, Indian, American ..... 8 @ 8½
Red, Turkey, English ..... 4 @ 6
Red, Tuscan, English ..... 7 @10
Red, Venetian, Amer., ℔ 100 ℔ .. 80@1.75
Red Venetian, English, ℔ 100 ℔ 1.80@3.00
Sienna, Italian, Burnt and Powdered ..... ℔ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd ..... 3½@ 7½
Sienna, American, Raw ..... 1½@ 2
Sienna, American, Burnt and Powdered ..... ℔ ℔ 1½@ 2
Talc, French ..... ℔ 100 ℔ $1.25@1.50
Talc, American ..... .90 @1.10
Terra Alba, French, ℔ 100 ℔ .. .95 @1.00
Terra Alba, English ..... .95 @1.00
Terra Alba, American No. 1 .... .65 @85
Terra Alba, American No. 2 .... .45 @50
Umber, Turkey, Bnt. & Pow. ℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer ..... 1½@ 2
Umber, Raw, Amer ..... 1½@ 2
Yellow, Chrome ..... 10½@25
Vermillion, American Lead .... 10 @40
Vermillion, Quicksilver, bulk .. @70
Vermillion, Quicksilver, bags .. @71
Vermillion, English, Import .. .80 @95
Vermillion, Chinese .... $1.05@1.20

## Colors in Oil.

Black, Lampblack ..... 12 @14
Blue, Chinese ..... 36 @40
Blue, Prussian ..... 32 @36
Blue, Ultramarine ..... 13 @16
Brown, Vandyke ..... 9½@13
Green, Chrome ..... 10 @12
Green, Paris ..... @24
Sienna, Raw ..... 10 @13
Sienna, Burnt ..... 10 @13
Umber, Raw ..... 9½@12
Umber, Burnt ..... 9½@12

## Miscellaneous.

Barytes, Foreign, ℔ ton .... $19.00@21.00
Barytes, Amer. floated .... 19.00@20.00
Barytes, Crude, No. 1 ..... 9.00@10.00
Chalk, in bulk ..... ℔ ton 2.50@ 2.60
Chalk, in bbls ..... @ 35
China Clay, English .. ℔ ton 12.00@17.50
Cobalt, Oxide ..... ℔ 100 ℔ 2.30@ 2.50
Whiting, Common. ℔ 100 ℔ .40@ .60
Whiting, Gilders ..... .45@ .65
Whiting, extra Gilders' .... .55@ .98

## Putty.

In bladders ..... $2.25
In bulk ..... 1.25
In cans 1 ℔ to 5 ℔ ..... 3.25
In cans 12 ℔ to 25 ℔ ..... 2.25

## Spirits Turpentine.

In Southern bbls .... 36½@37 c
In machine bbls .... 37 @37½c

## Glue.

Cabinet ..... 11½@16
Extra White ..... 18 @23
French ..... 12 @40
Irish ..... 13½@16
Low Grade ..... ℔ ℔ 9 @12
Medium White ..... 14½@16½

## Animal, Fish and Vegetable Oils.

Linseed, City, raw ..... ℔ gal 72@73
Linseed, City, boiled ..... 74 @75
Linseed, State and West'n, raw 69 @71
Linseed, raw Calcutta seed .... @85
Lard, Prime ..... 69 @70
Lard, Extra No. 1 ..... 50 @52
Lard, No. 1 ..... 43 @44
Cotton-seed, Crude ..... @ ..
Cotton-seed, Summer Yellow, prime ..... 40 @40½
Cotton-seed Summer Yellow, off grades ..... 37½@38
Sperm, Crude ..... @ ..
Sperm, Natural Spring ..... @ ..
Sperm, Bleached Spring ..... @ ..
Sperm, Natural Winter ..... 61 @62
Sperm, Bleached Winter ..... 64 @65
Whale, Crude ..... @ ..
Whale, Natural Winter ..... @45
Whale, Bleached Winter ..... @47
Menhaden, Crude, Sound ..... 23 @24
Menhaden, Light Strained ..... 29 @3[illegible]
Menhaden, Bleached Winter .. 31 @32
Menhaden, Ex Bleached Winter 34 @35
Tallow, prime ..... 52 @53
Cocoanut, Ceylon ..... 5¾@ 6
Cocoanut, Cochin ..... 8 @ 8¼
Cod, Domestic ..... 32 @33
Cod, Newfoundland ..... 34 @35
Red Elaine ..... 34 @35
Red Saponified ..... ℔ ℔ 4½@ 5
Olive, Italian, bbls ..... 58 @ 61
Neatsfoot, prime ..... 52 @53
Palm, prime, Lagos ..... ℔ ℔ 5¼@5¼

## Mineral Oils.

Black, 20 gravity, 25@30 cold test ..... ℔ gal. 9¾@ 10¼
Black, 29 gravity, 15 cold test. 10¾@ 11¾
Black, summer ..... 9¼@ 9¾
Cylinder, light filtered ..... 14¾@17¾
Cylinder, dark filtered ..... 11¾@15¾
Paraffine, 903-907 gravity ..... 12¾@12¾
Paraffine, 903 gravity ..... 11¾@11¾
Paraffine, 883 gravity ..... 9¼@10
Paraffine, red, No. 1 ..... 12¾@12¾
In small lots ¼c advance.


# THE IRON AGE.

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

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# CURRENT METAL PRICES.

## AUGUST 21, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

### IRON AND STEEL—

#### Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1⅝ in. round and square ..... } ₩ lb 1.75@1.85¢
1¼ to 4 in. x ⅜ to 1 in..... .....
Refined Iron:
1 to 1⅝ in. round and square..... } ₩ lb 1.85@1.95¢
1⅛ to 4 in. x ⅜ to 1 in.....
1⅛ to 4 in. x ¼ to 5-16..... ₩ lb 2.00@2.05¢
Rods—⅜ and 11-16 round and square. ₩ lb 2.90@2.30¢

| Angles: | Cts ₩ lb |
|---|---|
| 3 in x ¼ in. and larger | 2.20¢ |
| 3 to 3¼ in. x 3-16 in | 2.20¢ |
| 1¼ to 3 in. x ¼ in | 2.20¢ |
| 1¼ to 2¾ in. x 3-16 in and thicker | 2.10¢ |
| 1 to 1¼ in. x 3-16 in | 2 20¢ |
| 1 to 1¼ x ⅛ in | 2.30¢ |
| ⅞ x ⅛ in | 2 40¢ |
| ⅞ x ¼ in | 2.50¢ |
| ⅝ x ¼ in | 3.50¢ |
| ½ x 3-32 in | 4.00¢ |
| Tees: | |
| 1 in | 2.60¢ |
| 1¼ in | 2.40¢ |
| 1¾ in, and larger | 2 30¢ |
| Beams | 2.50¢ |
| Channels, 3 in. and larger | 2.50¢ |
| Bands—1¼ to 6 x 3-16 to No. 8 | ₩ lb 2.30¢ |
| "Burden's Best" Iron, base price | ₩ lb 3.15¢ |
| Burden's "H. B & S. Iron, base price | ₩ lb 2.95¢ |
| "Ulster" | ₩ lb 3.60¢ |
| Norway Bars | 3 75@4.25¢ |
| Norway Shapes | 4.00@4.50¢ |

#### Merchant Steel from Store—

| | per lb |
|---|---|
| Bessemer Machinery | 1.90 to 1.95¢ |
| Toe Calk, Tire and Sleigh Shoe | 2.00@2.50¢ |
| Best Cast Steel, base price in small lots | 7¼¢ |
| Best Cast Steel Machinery, base price in small lots | 8 ¢ |

#### Soft Steel Sheets—

| | | | |
|---|---|---|---|
| ¼ inch | 2.20¢ | No. 14 | 2.80¢ |
| 8-16 inch | 2.30¢ | No. 16 | 3.00¢ |
| No. 8 | 2.40¢ | No. 18 | 3.20¢ |
| No. 10 | 2.60¢ | No. 20 | 3.50¢ |
| No. 12 | 2.70¢ | No. 22 | 3.60¢ |

#### Sheet Iron from Store.

**Black.**

| | One Pass, C. R. Soft Steel. | R. G. Cleaned. |
|---|---|---|
| Nos. 14 to 16 | ₩ lb, 3.75 | 3.80¢ |
| Nos. 18 to 21 | ₩ lb, 3.85 | 3.90¢ |
| Nos. 22 to 24 | ₩ lb, 3.95 | 4.00¢ |
| Nos. 25 and 26 | ₩ lb, 4.05 | 4.10¢ |
| No. 27 | ₩ lb, 4.15 | 4.20¢ |
| No. 28 | ₩ lb, 4.25 | 4.30¢ |

#### Russia, Planished, &c.

Genuine Russia, according to assortment ₩ lb 10½¢
Patent Planished ₩ lb A, 9¾¢; B, 8¾¢, net.

#### Galvanized.

| | B. B. | |
|---|---|---|
| Nos. 10 to 16 | ₩ lb, 12¢ | |
| Nos. 17 to 21 | ₩ lb, 13¢ | |
| Nos. 22 to 24 | ₩ lb, 14¢ | 10 per cent off |
| Nos. 25 to 26 | ₩ lb, 15¢ | |
| No. 27 | ₩ lb, 16¢ | |
| No. 28 | ₩ lb, 17¢ | |
| No. 29 | ₩ lb, 19¢ | |
| No. 30 | ₩ lb, 21¢ | |

30 lb. 1¢ ₩ lb higher.

#### Foreign Steel from Store—

| | |
|---|---|
| Best Cast | ₩ lb 15 ¢ |
| Extra Cast | ₩ lb 18 @ 20 ¢ |
| Swaged, Cast | ₩ lb 16 ¢ |
| Best Double Shear | ₩ lb 15 ¢ |
| Blister, 1st quality | ₩ lb 13 ¢ |
| German Steel, Best | ₩ lb 10 ¢ |
| 2d quality | ₩ lb 9 ¢ |
| 3d quality | ₩ lb 8 ¢ |
| Sheet Cast Steel, 1st quality | ₩ lb 15 ¢ |
| 2d quality | ₩ lb 14 ¢ |
| 3d quality | ₩ lb 12 ¢ |
| R. Mushet's "Special" | ₩ lb 46 ¢ |
| " " Annealed | ₩ lb 75 ¢ |
| " " "Titanic" | ₩ lb 19 ¢ |
| Hobson's Choice XX Extra Best | ₩ lb 35 ¢ |
| Jessop Self Hardening | ₩ lb 45 ¢ |
| Seamans' "Nelson" Steel | 40 ¢ |
| Hobson's "Soho" Special Self-Hardening | ₩ lb 43 ¢ |

### METALS—

#### Tin—

| Duty.—Pigs, Bars and Block. Free. | Per lb |
|---|---|
| Banca, Pigs | 27¾@28 ¢ |
| Straits, Pigs | 27¾@27¾¢ |
| Straits in Bars | 28¼@28¾¢ |

#### Tin Plates—

**American Charcoal Plates.**

| | |
|---|---|
| Calland Grade: | |
| IC, 14 x 20 | $8.25 |
| IX, 14 x 20 | 9.75 |
| Melyn Grade: | |
| IC, 14 x 20 | 7.75 |
| IX, 14 x 20 | 9.25 |
| Allaway Grade: | |
| IC, 14 x 20 | 7.25 |
| IX, 14 x 20 | 8.35 |

**American Coke Plates—Bessemer—**

| | |
|---|---|
| IC, 14 x 20 ..... 108 lb | $7.0 @7.25 |
| IX, 14 x 20 | $7.75@8.00 |

**American Terne Plates—**

| | |
|---|---|
| IC, 20 x 28 | $12.50@13.00 |
| IX, 20 x 28 | 14 25@14.75 |

**Tin Boiler Plates, American—**

| | |
|---|---|
| IXX, 14 x 20 ..... 112 sheets | $16.00 |
| IXX, 14 x 28 ..... 112 sheets | 17.00 |
| IXX, 14 x 31 ..... 112 sheets | 18.50 |

#### Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

**Ingot—**

| | |
|---|---|
| Lake | 17¼@17¾¢ |
| Ansonia grade Casting | 16¾@17 ¢ |

#### Sheet and Bolt—

January 19, 1900. Net.
Prices, in cents per pound.
Sheet 30 x 60.

| Not wider than | Not longer than | And longer than | 64 oz. & over, 30 lb. sheet, 30 x 60 and heavier. | 32 oz. to 64 oz. 25 to 30 lb. | 24 oz. to 32 oz. 18¾ to 25 lb. | 16 oz. to 24 oz. 12½ to 18¾ lb. | 14 oz. and 15 oz. 11 to 12½ lb. | 12 oz. and 13 oz. 9⅝ to 11 lb. | 10 oz. and 11 oz. 7¾ to 9⅝ lb. | 8 oz. and 9 oz. 6¾ to 7¾ lb. | Lighter than 8 oz. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ins. | Ins. | Ins. | | | | | | | | | |
| 30 | 72 | ..... | 21 | 21 | 21 | 21 | 22 | 23 | 24 | 27 | 30 |
| 30 | 96 | 72 | 21 | 21 | 21 | 21 | 22 | 24 | 27 | 30 | |
| 30 | ..... | 96 | 21 | 21 | 21 | 21 | 23 | 27 | | | |
| 36 | 72 | ..... | 21 | 21 | 21 | 21 | 23 | 25 | 28 | 31 | |
| 36 | 96 | 72 | 21 | 21 | 21 | 23 | 23 | 27 | 30 | | |
| 36 | 120 | 96 | 21 | 21 | 21 | 23 | 24 | | | | |
| 36 | ..... | 120 | 21 | 21 | 22 | 23 | | | | | |
| 48 | 72 | ..... | 21 | 21 | 21 | 23 | 25 | 28 | 31 | | |
| 48 | 96 | 72 | 21 | 21 | 22 | 24 | 26 | 29 | | | |
| 48 | 120 | 96 | 21 | 21 | 23 | 25 | 29 | | | | |
| 48 | ..... | 120 | 21 | 22 | 24 | 27 | | | | | |
| 60 | 72 | ..... | 21 | 22 | 22 | 24 | 27 | 32 | | | |
| 60 | 96 | 72 | 21 | 21 | 23 | 25 | 30 | | | | |
| 60 | 120 | 96 | 21 | 22 | 24 | 27 | | | | | |
| 60 | ..... | 120 | 21 | 23 | 25 | 29 | | | | | |
| 72 | 96 | ..... | 21 | 22 | 24 | 29 | | | | | |
| 72 | 144 | 96 | 21 | 23 | 26 | 31 | | | | | |
| 72 | ..... | 144 | 22 | 24 | 29 | | | | | | |
| 108 | 120 | ..... | 22 | 24 | 30 | | | | | | |
| 108 | ..... | 120 | 24 | 25 | | | | | | | |
| wider than 108 | 144 | ..... | 25 | 27 | | | | | | | |
| | ..... | 144 | 26 | 29 | | | | | | | |

Rolled Round Copper, ⅜ inch diameter and over, ₩ lb 21¢.
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

#### Planished Copper—

1¢ ₩ lb more than Polished Copper.

#### Copper Bottoms, Pits and Flats—

| | |
|---|---|
| 14 oz. to square foot and heavier, ₩ lb | 27¢ |
| 12 oz. and up to 14 oz. to square foot, ₩ lb | 28¢ |
| 10 oz. and up to 12 oz., ₩ lb | 29¢ |
| Lighter than 10 oz., ₩ lb | 31¢ |

Circles less than 8 in. diameter, 2¢ ₩ lb additional.
Circles over 15 in. diameter are not classed as Copper Bottoms.

#### Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.
*List March 2, 1900.*

| Nos. | 0000 to Base | 9 and 10 | | 11 and 12 |
|---|---|---|---|---|
| | | ¼¢ | | ¼¢ ₩ lb adv. |
| Nos. | 13 | 14 | 15 | 16 |
| | ¼¢ | ¾¢ | 1¢ | 1¼¢ ₩ lb adv. |
| Nos. | 17 | 18 | 19 | 20 |
| | 1¾¢ | 2¢ | 2¼¢ | 2¾¢ ₩ lb adv |

#### Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

| Stubs' W. G. | B. & S. W. G. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1¼ | 1½ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4-0 | 0 | ..... | ..... | ..... | ..... | 33 | 31 | 30 | 29 | 28 | 27 | 25 | 24 |
| 12 | 10 | ..... | ..... | 37 | 35 | 33 | 31 | 30 | 29 | 28 | 27 | 25 | 24 |
| 13 | 11 | ..... | ..... | 37 | 35 | 33 | 31 | 30 | 29 | 28 | 27 | 25 | 24 |
| 14 | 12 | ..... | 41 | 37 | 35 | 33 | 31 | 30 | 29 | 28 | 27 | 25 | 24 |
| 15 | 13 | ..... | 42 | 38 | 36 | 33 | 32 | 31 | 30 | 30 | 28 | 26 | 25 |
| 16 | 14 | ..... | 43 | 39 | 37 | 34 | 33 | 32 | 31 | 30 | 29 | 26 | 25 |
| 17 | 15 | ..... | 44 | 41 | 38 | 35 | 34 | 33 | 32 | 31 | 30 | 27 | 26 |
| 18 | 16 | 61 | 46 | 42 | 39 | 36 | 35 | 34 | 33 | 32 | 31 | 28 | 27 |
| 19 | 17 | 62 | 47 | 43 | 40 | 37 | 36 | 35 | 34 | 33 | 32 | 30 | 29 |
| 20 | 18–19 | 64 | 49 | 44 | 41 | 39 | 38 | 37 | 36 | 35 | 34 | 32 | 31 |
| 21 | 20 | 66 | 51 | 46 | 43 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 |
| 22 | 21 | 71 | 56 | 48 | 44 | 42 | 41 | 40 | 39 | 38 | 37 | 37 | 36 |
| 23 | 22 | 76 | 61 | 50 | 46 | 44 | 43 | 42 | 41 | 40 | 39 | 39 | 39 |
| 24 | 23 | 81 | 66 | 53 | 48 | 46 | 45 | 44 | 43 | 42 | 40 | 40 | 41 |
| 25 | 24 | 86 | 71 | 56 | 51 | 49 | 47 | 46 | 45 | 43 | 43 | 44 | 45 |

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

#### Iron Pipe Sizes—Brass

| ⅛ | ¼ | ⅜ | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 3½ | 4 | 4½ | 5 | 6 inch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90 | 83 | 90 | 97 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 26 | 23 | 25 | 27 | 28¢ ₩ lb |

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

#### Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1898
Brown & Sharpe's gauge standard.

| | Per lb. |
|---|---|
| Plain Round Tube, ⅛ in. up to 2 in | $0.35 |
| " " ¼ " ¾ " | .36 |
| " " ⅜ " ¾ " | .38 |
| " " ½ " ¾ " | .41 |
| " " 5-16 " ¾ " | .48 |
| " " ¼ " 5-16 " | .65 |
| " " 3-16 " ¼ " | 1.00 |
| " " ⅛ " 3-16 " | 1.50 |
| Smaller than ⅛ inch | Special |
| 3 inch and larger | .40 |
| Over 3 inch to 3½ inch, inclusive | .45 |
| Over 3½ inch | .50 |
| Bronze and Copper, advance on Brass List, 3 cents. | |
| Discount from list | 35% |

#### Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

| Common High Brass | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. |
|---|---|---|---|---|---|---|---|---|---|---|
| Wider than | 2 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 |
| and including | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| To No. 20 inclusive | .22 | .23 | .25 | .27 | .29 | .31 | .33 | .36 | .38 | .40 |
| Nos. 21, 22, 23 and 24 | .22 | .24 | .26 | .28 | .30 | .32 | .34 | .37 | .39 | .41 |
| Nos. 25 and 26 | .23 | .24½ | .27 | .29 | .31 | .33 | .35 | .38 | .40 | .42 |
| Nos. 27 and 28 | .23 | .25 | .28 | .30 | .32 | .34 | .36 | .39 | .41 | .43 |

| Common High Brass | in. | in. | in. | in. | in. | in. | in. | in. |
|---|---|---|---|---|---|---|---|---|
| Wider than | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 |
| and including | 28 | 30 | 32 | 34 | 36 | 38 | 40 | |
| To No. 20, inclusive | .39 | .42 | .46 | .50 | .55 | .60 | .65 | * |
| Nos. 21, 22, 23 and 24 | .40 | .43 | .47 | .51 | .56 | .61 | .68 | |
| Nos. 25 and 26 | .41 | .44 | .48 | .52 | .57 | .63 | .71 | |
| Nos. 27 and 28 | .42 | .45 | .49 | .53 | .58 | .65 | .75 | |

*Special prices not less than 80 cents.
Add ½¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 20%

#### Wire in Coils. List February 20, 1896.

| Brown & Sharpe's gauge the standard. | Com. high brass. | Low brass. | Gilt's bronze and copper. |
|---|---|---|---|
| All Nos. to No. 10, inclusive | $0.23 | $0.27 | $0.28 |
| Above No. 10 to No. 16 | .23½ | .27½ | .28½ |
| No. 17 and No. 18 | .24 | .28 | .32 |
| No. 19 and No. 20 | .25 | .29 | .33 |
| No. 21 | .26 | .30 | .34 |
| No. 22 | .27 | .31 | .35 |
| No. 23 | .28 | .32 | .36 |
| No. 24 | .30 | .34 | .38 |
| No. 25 | .32 | .36 | .40 |
| No. 26 | .35 | .39 | .43 |
| No. 27 | .38 | .42 | .46 |
| No. 28 | .42 | .46 | .51 |
| No. 29 | .45 | .49 | .54 |
| No. 30 | .48 | .52 | .62 |
| No. 31 | .51 | .55 | .67 |
| No. 32 | .55 | .59 | .73 |
| No. 33 | .59 | .63 | .82 |
| No. 34 | .64 | .68 | .95 |
| No. 35 | .70 | .74 | 1.30 |
| No. 36 | .76 | .80 | 1.50 |
| No. 37 | 1.00 | 1.04 | 1.70 |
| No. 38 | 1.30 | 1.34 | 2.00 |
| No. 39 | 2.00 | 2.00 | 3.25 |
| No. 40 | 2.60 | 2.60 | 5.75 |

Discount, Brass Wire, 20%; Copper Wire, Net.
List November 16, 96.
Spring Wire, 2¢ ₩ lb advance.

#### Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ lb, net ..... 20¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net ..... 21¢
Other sizes and extreme lengths, special prices.

#### Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb
Western Spelter ..... 4.45@4½¢

#### Zinc.

Duty: Sheet, 2¢ ₩ lb.
600 lb casks ..... Per lb ..... 7¼¢

#### Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 3½¢ ₩ lb.

| | |
|---|---|
| American Pig | 4.60@4.62½¢ |
| Bar | 6½@6¾¢ |
| Pipe | 6¾¢ ..... 20% off |
| Tin Lined Pipe | 12¾¢ ..... 20% off |
| Block Tin Pipe | 40 ¢ ..... 30% off |
| Shot Lead, full rolls | 7¾¢ ..... 20% off |
| Sheet Lead, cut | 7¾¢ ..... 30% off |

Old Lead in exchange, 4½¢ ₩ lb.

#### Solder.

½ & ¼ guaranteed ..... 18¾@19 ¢
No. 1 ..... 14¾@17 ¢
Prices of Solder indicated by private brand vary according to composition.

#### Antimony—

Duty, ¾¢ ₩ lb.

| | |
|---|---|
| Cookson | ₩ lb 10½@11¢ |
| Hallett's | ₩ lb 8½@9¼¢ |
| U. S. | ₩ lb 8¾@9 ¢ |

#### Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.
No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots ..... ₩ lb 37¢
100-lb lots ..... ₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots ..... ₩ lb 34¢
100-lb lots ..... ₩ lb 33¢

| Aluminum Sheet, B. & S. gauge. 50 lb or more | | | |
|---|---|---|---|
| Wider than | 6-in. | 14-in. | 24-in. |
| And including | 14-in. | 24-in. | 30-in. |
| | ₩ lb. | ₩ lb. | ₩ lb |
| Nos. 13 to 19 | $0.42 | $0.44 | $0.47 |
| No. 20 | .44 | .46 | .49 |
| Nos. 21 to 23 | .46 | .48 | .51 |
| No. 24 | .48 | .50 | .53 |
| No. 25 | .47 | .51 | .54 |
| No. 26 | .47 | .54 | .59 |
| No. 27 | .48 | .57 | .62 |
| No. 28 | .48 | .57 | .64 |
| No. 29 | .49 | .60 | .69 |
| No. 30 | .50 | .64 | .77 |

*Note.*—Lots of less than 50 lb 5¢ ₩ lb extra.

| Aluminum Wire, B. & S. Gauge. | | | |
|---|---|---|---|
| Larger than No. 9 | ₩ lb 40¢ | No. 15 | ₩ lb 43¢ |
| No. 9 to No. 10 | ₩ lb 40½¢ | No. 17 | ₩ lb 50¢ |
| No. 11 | ₩ lb 41 ¢ | No. 18 | ₩ lb 55¢ |
| No. 12 | ₩ lb 41½¢ | No. 19 | ₩ lb 60¢ |
| No. 13 | ₩ lb 42 ¢ | No. 20 | ₩ lb 65¢ |
| No. 14 | ₩ lb 43½¢ | No. 21 | ₩ lb 85¢ |

#### Old Metals.

*Dealers' Purchasing Prices Paid in New York.*

| | |
|---|---|
| Heavy Copper | ₩ lb 14¾¢ |
| Light and Tinned Copper | ₩ lb 13¾¢ |
| Heavy Brass | ₩ lb 10 ¢ |
| Light Brass | ₩ lb 8 ¢ |
| Lead | ₩ lb 4 ¢ |
| Tea Lead | ₩ lb 3½¢ |
| Zinc | ₩ lb 2½¢ |
| No. 1 Pewter | ₩ lb 18¾¢ |
| No. 2 Pewter | ₩ lb 9 ¢ |
| Tin Plate Scrap | ₩ ton $6.00 |
| Wrought Scrap Iron | ₩ gross ton $10.50@11.00 |
| Heavy Cast Scrap | ₩ gross ton $10.00@10.25 |
| Stove Plate Scrap | ₩ gross ton $7.00@7.50 |
| Burnt Iron | ₩ gross ton $5.00@5.25 |